



SEQUENCE LISTING

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NETT, Juergen H.
DAVIDSON, Robert C.

<120> METHODS TO ENGINEER MAMMALIAN-TYPE
CARBOHYDRATE STRUCTURES

<130> GF0022P

<140> 10/500,240
<141> 2005-03-23

<150> PCT/US02/41510
<151> 2002-12-24

<150> 60/344,169
<151> 2001-12-27

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agaatttggg gggtaagaat tccarcacca ytcrtg 36

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cctaagctgg tatgcgttct ctttgccata tc 32

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gcggcataaa caataataga tgctataaaag 30

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gt~~aatacgac~~ tcactatagg gc

22

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acgaggcaag ctaaacagat ctcgaagtat cgagggttat ccag 44

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agcctcagcg ccaacaagcg atgg 24

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ctggataacc ctcgataactt cgagatctgt ttagcttgcc tcgt 44

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<400> 12
gatttataga catgaaccat tggctcgttt tcgacactgg atgg 44

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atcctttacc gatgctgtat 20

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<400> 14
ataaacagtat gtgttacacg cgtgttag 27

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<400> 15

tctggcgcg cttcccgag agaactggcc tccctc

36

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<400> 16

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37

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<211> 28

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<400> 17

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28

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<212> DNA

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<220>
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<400> 22
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28

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<213> *Saccharomyces cerevisiae*

<400> 23
His Asp Glu Leu
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<210> 24
<211> 458
<212> PRT
<213> *Saccharomyces cerevisiae*

<220>
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<222> (304) ... (318)
<223> Xaa is a variable amino acid

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<222> (416) ... (436)
<223> Xaa is a variable amino acid

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Met Glu Gly Glu Gln Ser Pro Gln Gly Glu Lys Ser Leu Gln Arg Lys

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Gln Phe Val Arg Pro Pro Leu Asp Leu Trp Gln Asp Leu Lys Asp Gly			
20	25	30	
Val Arg Tyr Val Ile Phe Asp Cys Arg Ala Asn Leu Ile Val Met Pro			
35	40	45	
Leu Leu Ile Leu Phe Glu Ser Met Leu Cys Lys Ile Ile Ile Lys Lys			
50	55	60	
Val Ala Tyr Thr Glu Ile Asp Tyr Lys Ala Tyr Met Glu Gln Ile Glu			
65	70	75	80
Met Ile Gln Leu Asp Gly Met Leu Asp Tyr Ser Gln Val Ser Gly Gly			
85	90	95	
Thr Gly Pro Leu Val Tyr Pro Ala Gly His Val Leu Ile Tyr Lys Met			
100	105	110	
Met Tyr Trp Leu Thr Glu Gly Met Asp His Val Glu Arg Gly Gln Val			
115	120	125	
Phe Phe Arg Tyr Leu Tyr Leu Leu Thr Leu Ala Leu Gln Met Ala Cys			
130	135	140	
Tyr Tyr Leu Leu His Leu Pro Pro Trp Cys Val Val Leu Ala Cys Leu			
145	150	155	160
Ser Lys Arg Leu His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Cys			
165	170	175	
Phe Thr Thr Leu Phe Met Val Val Thr Val Leu Gly Ala Ile Val Ala			
180	185	190	
Ser Arg Cys His Gln Arg Pro Lys Leu Lys Lys Ser Leu Ala Leu Val			
195	200	205	
Ile Ser Ala Thr Tyr Ser Met Ala Val Ser Ile Lys Met Asn Ala Leu			
210	215	220	
Leu Tyr Phe Pro Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala			
225	230	235	240
Asn Val Ile Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln			
245	250	255	
Val Ala Val Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu			
260	265	270	
His Cys Ala Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile			
275	280	285	
Asn Trp Gln Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe Xaa			
290	295	300	

Xaa Phe Val
 305 310 315 320
 Thr Arg Tyr Pro Arg Ile Leu Pro Asp Leu Trp Ser Ser Leu Cys His
 325 330 335
 Pro Leu Arg Lys Asn Ala Val Leu Asn Ala Asn Pro Ala Lys Thr Ile
 340 345 350
 Pro Phe Val Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser Arg
 355 360 365
 Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Ile
 370 375 380
 Leu Ile Phe Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp Tyr
 385 390 395 400
 Val Leu His Glu Trp Cys Trp Asn Ser Tyr Pro Pro Asn Ser Gln Xaa
 405 410 415
 Xaa
 420 425 430
 Xaa Xaa Xaa Xaa Ser Gly Ser Val Ala Leu Ala Lys Ser His Leu Arg
 435 440 445
 Thr Thr Ser Ser Met Glu Lys Lys Leu Asn
 450 455

<210> 25

<211> 458

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 25

Met Glu Gly Glu Gln Ser Pro Gln Gly Glu Lys Ser Leu Gln Arg Lys
 1 5 10 15
 Gln Phe Val Arg Pro Pro Leu Asp Leu Trp Gln Asp Leu Lys Asp Gly
 20 25 30
 Val Arg Tyr Val Ile Phe Asp Cys Arg Ala Asn Leu Ile Val Met Pro
 35 40 45
 Leu Leu Ile Leu Phe Glu Ser Met Leu Cys Lys Ile Ile Ile Lys Lys
 50 55 60
 Val Ala Tyr Thr Glu Ile Asp Tyr Lys Ala Tyr Met Glu Gln Ile Glu

65	70	75	80
Met Ile Gln Leu Asp Gly Met Leu Asp Tyr Ser Gln Val Ser Gly Gly			
85	90	95	
Thr Gly Pro Leu Val Tyr Pro Ala Gly His Val Leu Ile Tyr Lys Met			
100	105	110	
Met Tyr Trp Leu Thr Glu Gly Met Asp His Val Glu Arg Gly Gln Val			
115	120	125	
Phe Phe Arg Tyr Leu Tyr Leu Leu Thr Leu Ala Leu Gln Met Ala Cys			
130	135	140	
Tyr Tyr Leu Leu His Leu Pro Pro Trp Cys Val Val Leu Ala Cys Leu			
145	150	155	160
Ser Lys Arg Leu His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Cys			
165	170	175	
Phe Thr Thr Leu Phe Met Val Val Thr Val Leu Gly Ala Ile Val Ala			
180	185	190	
Ser Arg Cys His Gln Arg Pro Lys Leu Lys Lys Ser Leu Ala Leu Val			
195	200	205	
Ile Ser Ala Thr Tyr Ser Met Ala Val Ser Ile Lys Met Asn Ala Leu			
210	215	220	
Leu Tyr Phe Pro Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala			
225	230	235	240
Asn Val Ile Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln			
245	250	255	
Val Ala Val Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu			
260	265	270	
His Cys Ala Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile			
275	280	285	
Asn Trp Gln Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe His			
290	295	300	
Leu Ala Leu Leu Ile Ser His Leu Ile Ala Leu Thr Thr Leu Phe Val			
305	310	315	320
Thr Arg Tyr Pro Arg Ile Leu Pro Asp Leu Trp Ser Ser Leu Cys His			
325	330	335	
Pro Leu Arg Lys Asn Ala Val Leu Asn Ala Asn Pro Ala Lys Thr Ile			
340	345	350	
Pro Phe Val Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser Arg			
355	360	365	

Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Ile
 370 375 380
 Leu Ile Phe Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp Tyr
 385 390 395 400
 Val Leu His Glu Trp Cys Trp Asn Ser Tyr Pro Pro Asn Ser Gln Ala
 405 410 415
 Ser Thr Leu Leu Leu Ala Leu Asn Thr Val Leu Leu Leu Leu Ala
 420 425 430
 Leu Thr Gln Leu Ser Gly Ser Val Ala Leu Ala Lys Ser His Leu Arg
 435 440 445
 Thr Thr Ser Ser Met Glu Lys Lys Leu Asn
 450 455

<210> 26
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 <212> PRT
 <213> *Saccharomyces cerevisiae*

<220>
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 <222> (333) ... (347)
 <223> Xaa is a variable amino acid

<400> 26
 Trp Gln Asp Leu Lys Asp Gly Val Arg Tyr Val Ile Phe Asp Cys Arg
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 Ala Asn Leu Ile Val Met Pro Leu Leu Ile Leu Phe Glu Ser Met Leu
 20 25 30
 Cys Lys Ile Ile Ile Lys Lys Val Ala Tyr Thr Glu Ile Asp Tyr Lys
 35 40 45
 Ala Tyr Met Glu Gln Ile Glu Met Ile Gln Leu Asp Gly Met Leu Asp
 50 55 60
 Tyr Ser Gln Val Ser Gly Gly Thr Gly Pro Leu Val Tyr Pro Ala Gly
 65 70 75 80
 His Val Leu Ile Tyr Lys Met Met Tyr Trp Leu Thr Glu Gly Met Asp
 85 90 95

His Val Glu Arg Gly Gln Val Phe Phe Arg Tyr Leu Tyr Leu Leu Thr
 100 105 110
 Leu Ala Leu Gln Met Ala Cys Tyr Tyr Leu Leu His Leu Pro Pro Trp
 115 120 125
 Cys Val Val Leu Ala Cys Leu Ser Lys Arg Leu His Ser Ile Tyr Val
 130 135 140
 Leu Arg Leu Phe Asn Asp Cys Phe Thr Thr Leu Phe Met Val Val Thr
 145 150 155 160
 Val Leu Gly Ala Ile Val Ala Ser Arg Cys His Gln Arg Pro Lys Leu
 165 170 175
 Lys Lys His Gln Thr Cys Lys Val Pro Pro Phe Val Phe Phe Met
 180 185 190
 Cys Cys Ala Ser Tyr Arg Val His Ser Ile Phe Val Leu Arg Leu Phe
 195 200 205
 Asn Asp Pro Val Ala Met Val Leu Leu Phe Leu Ser Ile Asn Leu Leu
 210 215 220
 Leu Ala Gln Arg Trp Gly Trp Gly Ser Leu Ala Leu Val Ile Ser Ala
 225 230 235 240
 Thr Tyr Ser Met Ala Val Ser Ile Lys Met Asn Ala Leu Leu Tyr Phe
 245 250 255
 Pro Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala Asn Val Ile
 260 265 270
 Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln Val Ala Val
 275 280 285
 Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu His Cys Ala
 290 295 300
 Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile Asn Trp Gln
 305 310 315 320
 Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe Xaa Xaa Xaa Xaa
 325 330 335
 Xaa Phe Val Thr Arg Tyr
 340 345 350
 Pro Arg Ile Leu Pro Asp Leu Trp Ser Ser Leu Cys His Pro Leu Arg
 355 360 365
 Lys Asn Ala Val Leu Asn Ala Asn Pro Ala Lys Thr Ile Pro Phe Val
 370 375 380
 Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser Arg Ser Leu His

385	390	395	400
Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Ile Leu Ile Phe			
405	410	415	
Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp Tyr Val Leu His			
420	425	430	
Glu Trp Cys Trp Asn Ser Tyr Pro Pro Asn Ser			
435	440		

<210> 27
<211> 373
<212> PRT
<213> Homo sapiens

<400> 27			
Trp Gln Glu Arg Arg Leu Leu Leu Arg Glu Pro Arg Tyr Thr Leu Leu			
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Val Ala Ala Cys Leu Cys Leu Ala Glu Val Gly Ile Thr Phe Trp Val			
20	25	30	
Ile His Arg Val Ala Tyr Thr Glu Ile Asp Trp Lys Ala Tyr Met Ala			
35	40	45	
Glu Val Glu Gly Val Gly Thr Tyr Asp Tyr Thr Gln Leu Gln Gly Asp			
50	55	60	
Thr Gly Pro Leu Val Tyr Pro Ala Gly Phe Val Tyr Ile Phe Met Gly			
65	70	75	80
Leu Tyr Tyr Ala Thr Ser Arg Gly Thr Asp Ile Arg Met Ala Gln Asn			
85	90	95	
Ile Phe Ala Val Leu Tyr Leu Ala Thr Leu Leu Leu Val Phe Leu Ile			
100	105	110	
Tyr His Gln Thr Cys Lys Val Pro Pro Phe Val Phe Phe Phe Met Cys			
115	120	125	
Cys Ala Ser Tyr Arg Val His Ser Ile Phe Val Leu Arg Leu Phe Asn			
130	135	140	
Asp Pro Val Ala Met Val Leu Leu Phe Leu Ser Ile Asn Leu Leu Leu			
145	150	155	160
Ala Gln Arg Trp Gly Trp Gly Cys Cys Phe Phe Ser Leu Ala Val Ser			
165	170	175	

Val Lys Met Asn Val Leu Leu Phe Ala Pro Gly Leu Leu Phe Leu Leu
 180 185 190
 Leu Thr Gln Phe Gly Phe Arg Gly Ala Leu Pro Lys Leu Gly Ile Cys
 195 200 205
 Ala Gly Leu Gln Val Val Leu Gly Leu Pro Phe Leu Leu Glu Asn Pro
 210 215 220
 Ser Gly Tyr Leu Ser Arg Ser Phe Asp Leu Gly Arg Gln Phe Leu Phe
 225 230 235 240
 His Trp Thr Val Asn Trp Arg Phe Leu Pro Glu Ala Leu Phe Leu His
 245 250 255
 Arg Ala Phe His Leu Ala Leu Leu Thr Ala His Leu Thr Leu Leu Leu
 260 265 270
 Leu Phe Ala Leu Cys Arg Trp His Arg Thr Gly Glu Ser Ile Leu Ser
 275 280 285
 Leu Leu Arg Asp Pro Ser Lys Arg Lys Val Pro Pro Gln Pro Leu Thr
 290 295 300
 Pro Asn Gln Ile Val Ser Thr Leu Phe Thr Ser Asn Phe Ile Gly Ile
 305 310 315 320
 Cys Phe Ser Arg Ser Leu His Tyr Gln Phe Tyr Val Trp Tyr Phe His
 325 330 335
 Thr Leu Pro Tyr Leu Leu Trp Ala Met Pro Ala Arg Trp Leu Thr His
 340 345 350
 Leu Leu Arg Leu Leu Val Leu Gly Leu Ile Glu Leu Ser Trp Asn Thr
 355 360 365
 Tyr Pro Ser Thr Ser
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<210> 28
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 <212> PRT
 <213> *Saccharomyces cerevisiae*

<400> 28
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 Leu Leu Ile Leu Phe Glu Ser Met Leu Cys Lys Ile Ile Ile Lys Lys

20	25	30
Val Ala Tyr Thr Glu Ile Asp Tyr Lys Ala Tyr Met Glu Gln Ile Glu		
35	40	45
Met Ile Gln Leu Asp Gly Met Leu Asp Tyr Ser Gln Val Ser Gly Gly		
50	55	60
Thr Gly Pro Leu Val Tyr Pro Ala Gly His Val Leu Ile Tyr Lys Met		
65	70	75
Met Tyr Trp Leu Thr Glu Gly Met Asp His Val Glu Arg Gly Gln Val		
85	90	95
Phe Phe Arg Tyr Leu Tyr Leu Leu Thr Leu Ala Leu Gln Met Ala Cys		
100	105	110
Tyr Tyr Leu Leu His Pro Trp Cys Val Val Leu Ala Cys Leu Ser Lys		
115	120	125
Arg Leu His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Cys Phe Thr		
130	135	140
Thr Leu Phe Met Val Val Thr Val Leu Gly Ala Ile Val Ala Ser Arg		
145	150	155
Cys His Gln Arg Pro Lys Leu Lys Lys Ser Leu Ala Leu Val Ile Ser		
165	170	175
Ala Thr Tyr Ser Met Ala Val Ser Ile Lys Met Asn Ala Leu Leu Tyr		
180	185	190
Phe Pro Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala Asn Val		
195	200	205
Ile Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln Val Ala		
210	215	220
Val Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu His Cys		
225	230	235
Ala Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile Asn Trp		
245	250	255
Gln Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe		
260	265	

<210> 29
 <211> 258
 <212> PRT
 <213> Drosophila virilis

<400> 29

Ile	Lys	Tyr	Leu	Ala	Phe	Glu	Pro	Ala	Ala	Leu	Pro	Ile	Val	Ser	Val
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Leu	Ile	Val	Leu	Ala	Glu	Ala	Val	Ile	Asn	Val	Leu	Val	Ile	Gln	Arg
		20					25					30			
Val	Pro	Tyr	Thr	Glu	Ile	Asp	Trp	Lys	Ala	Tyr	Met	Gln	Glu	Cys	Glu
	35				40						45				
Gly	Phe	Leu	Asn	Gly	Thr	Thr	Asn	Tyr	Ser	Leu	Leu	Arg	Gly	Asp	Thr
	50				55					60					
Gly	Pro	Leu	Val	Tyr	Pro	Ala	Ala	Phe	Val	Tyr	Ile	Tyr	Ser	Gly	Leu
	65				70				75				80		
Tyr	Tyr	Leu	Thr	Gly	Gln	Gly	Thr	Asn	Val	Arg	Leu	Ala	Gln	Tyr	Ile
		85				90					95				
Phe	Ala	Cys	Ile	Tyr	Leu	Leu	Gln	Met	Cys	Leu	Val	Leu	Arg	Leu	Tyr
		100				105					110				
Thr	Lys	Ser	Arg	Lys	Val	Pro	Pro	Tyr	Val	Leu	Val	Leu	Ser	Ala	Phe
	115				120					125					
Thr	Ser	Tyr	Arg	Ile	His	Ser	Ile	Tyr	Val	Leu	Arg	Leu	Phe	Asn	Asp
	130				135				140						
Pro	Val	Ala	Ile	Leu	Leu	Leu	Tyr	Ala	Ala	Leu	Asn	Leu	Phe	Leu	Asp
	145				150				155				160		
Gln	Arg	Trp	Thr	Leu	Gly	Ser	Ile	Cys	Tyr	Ser	Leu	Ala	Val	Gly	Val
		165				170					175				
Lys	Met	Asn	Ile	Leu	Leu	Phe	Ala	Pro	Ala	Leu	Leu	Phe	Tyr	Leu	
		180				185					190				
Ala	Asn	Leu	Gly	Val	Leu	Arg	Thr	Leu	Val	Gln	Leu	Thr	Ile	Cys	Ala
	195				200					205					
Val	Leu	Gln	Leu	Phe	Ile	Gly	Ala	Pro	Phe	Leu	Arg	Thr	His	Pro	Met
	210				215				220						
Glu	Tyr	Leu	Arg	Gly	Ser	Phe	Asp	Leu	Gly	Arg	Ile	Phe	Glu	His	Lys
	225				230				235				240		
Trp	Thr	Val	Asn	Tyr	Arg	Phe	Leu	Ser	Lys	Glu	Leu	Phe	Glu	Gln	Arg
		245				250					255				
Glu	Phe														

<210> 30
<211> 267
<212> PRT
<213> *Saccharomyces cerevisiae*

<400> 30

Arg	Tyr	Val	Ile	Phe	Asp	Cys	Arg	Ala	Asn	Leu	Ile	Val	Met	Pro	Leu
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Leu	Ile	Leu	Phe	Glu	Ser	Met	Leu	Cys	Lys	Ile	Ile	Ile	Lys	Lys	Val
				20						25				30	
Ala	Tyr	Thr	Glu	Ile	Asp	Tyr	Lys	Ala	Tyr	Met	Glu	Gln	Ile	Glu	Met
				35					40				45		
Ile	Gln	Leu	Asp	Gly	Met	Leu	Asp	Tyr	Ser	Gln	Val	Ser	Gly	Gly	Thr
				50				55			60				
Gly	Pro	Leu	Val	Tyr	Pro	Ala	Gly	His	Val	Leu	Ile	Tyr	Lys	Met	Met
				65				70			75			80	
Tyr	Trp	Leu	Thr	Glu	Gly	Met	Asp	His	Val	Glu	Arg	Gly	Gln	Val	Phe
				85				90				95			
Phe	Arg	Tyr	Leu	Tyr	Leu	Leu	Thr	Leu	Ala	Leu	Gln	Met	Ala	Cys	Tyr
				100				105				110			
Tyr	Leu	Leu	His	Trp	Cys	Val	Val	Leu	Ala	Cys	Leu	Ser	Lys	Arg	Leu
				115				120				125			
His	Ser	Ile	Tyr	Val	Leu	Arg	Leu	Phe	Asn	Asp	Cys	Phe	Thr	Thr	Leu
				130				135			140				
Phe	Met	Val	Val	Thr	Val	Leu	Gly	Ala	Ile	Val	Ala	Ser	Arg	Cys	His
				145				150			155			160	
Gln	Arg	Pro	Lys	Leu	Lys	Lys	Ser	Leu	Ala	Leu	Val	Ile	Ser	Ala	Thr
				165				170				175			
Tyr	Ser	Met	Ala	Val	Ser	Ile	Lys	Met	Asn	Ala	Leu	Leu	Tyr	Phe	Pro
				180				185				190			
Ala	Met	Met	Ile	Ser	Leu	Phe	Ile	Leu	Asn	Asp	Ala	Asn	Val	Ile	Leu
				195				200			205				
Thr	Leu	Leu	Asp	Leu	Val	Ala	Met	Ile	Ala	Trp	Gln	Val	Ala	Val	Ala
				210				215			220				
Val	Pro	Phe	Leu	Arg	Ser	Phe	Pro	Gln	Gln	Tyr	Leu	His	Cys	Ala	Phe
				225				230			235			240	

Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile Asn Trp Gln Met		
245	250	255
Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe		
260	265	

<210> 31
<211> 257
<212> PRT
<213> Drosophila melanogaster

<400> 31		
Lys Tyr Leu Leu Leu Glu Pro Ala Ala Leu Pro Ile Val Gly Leu Phe		
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Val Leu Leu Ala Glu Leu Val Ile Asn Val Val Val Ile Gln Arg Val		
20	25	30
Pro Tyr Thr Glu Ile Asp Trp Val Ala Tyr Met Gln Glu Cys Glu Gly		
35	40	45
Phe Leu Asn Gly Thr Thr Asn Tyr Ser Leu Leu Arg Gly Asp Thr Gly		
50	55	60
Pro Leu Val Tyr Pro Ala Ala Phe Val Tyr Ile Tyr Ser Ala Leu Tyr		
65	70	75
Tyr Val Thr Ser His Gly Thr Asn Val Arg Leu Ala Gln Tyr Ile Phe		
85	90	95
Ala Gly Ile Tyr Leu Leu Gln Leu Ala Leu Val Leu Arg Leu Tyr Ser		
100	105	110
Lys Ser Arg Lys Val Pro Pro Tyr Val Leu Val Leu Ser Ala Phe Thr		
115	120	125
Ser Tyr Arg Ile His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Pro		
130	135	140
Val Ala Val Leu Leu Leu Tyr Ala Ala Leu Asn Leu Phe Leu Asp Arg		
145	150	155
Arg Trp Thr Leu Gly Ser Thr Phe Phe Ser Leu Ala Val Gly Val Lys		
165	170	175
Met Asn Ile Leu Leu Phe Ala Pro Ala Leu Leu Phe Tyr Leu Ala		
180	185	190
Asn Leu Gly Leu Leu Arg Thr Ile Leu Gln Leu Ala Val Cys Gly Val		

195	200	205
Ile Gln Leu Leu Leu Gly Ala Pro Phe Leu Leu Thr His Pro Val Glu		
210	215	220
Tyr Leu Arg Gly Ser Phe Asp Leu Gly Arg Ile Phe Glu His Lys Trp		
225	230	235
Thr Val Asn Tyr Arg Phe Leu Ser Arg Asp Val Phe Glu Asn Arg Thr		
245	250	255
Phe		

<210> 32
<211> 1377
<212> DNA
<213> *Saccharomyces cerevisiae*

<400> 32

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agggccaatc ttatcggtat gcccctttt atttgttcg aaagcatgct gtgcaagatt 180
atcattaaga aggttagctt cacagagatc gattacaagg cgtacatgga gcagatcgag 240
atgattcagc tcgatggcat gctggactac tctcaggtaa gtgggtggaaac gggcccgctg 300
gtgtatccag caggccacgt cttgtatctac aagatgtatgt actggctaac agagggaaatg 360
gaccacgttg agcgccggca agtgttttc agatacttgtt atctccttac actggcgtta 420
caaattggcgt gttactaccc ttacatcta ccaccgtggt gtgtggtctt ggcgtgcctc 480
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tttatggtcg tcacggttttt gggggctatc gtggccagca ggtgccatca ggcgcggccaaa 600
ttaaagaagt cccttgcgtt ggtgtatctcc gcaacatataa gtatggctgt ggcattaaag 660
atgaatgcgc tggtgtatcc ccctgcaatg atgatttctc tattcatcct taatgacgcg 720
aacgtaatcc ttactttgtt ggatctcggtt gcgtatgtt catggcaagt cgcaatggca 780
gtgcgcgttcc tgccgcgtt tccgcaacag tacctgcatt ggcgtttttaa ttccggcagg 840
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aagagggttcc acttggccct ttaatcagc cacctgtatcg cgctcaccac actgttcgtc 960
acaagataacc ctgcgtatcc gcccgttta tggcttccc tgtgcgttcc gctgaggaaa 1020
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ttcatcggtcg tcctatccat aaggtccctc cactaccgtt ttctatccgt gtatcactgg 1140
actttgccta tactgtatcc ttgggtggaa atgcgttccat catttggtac 1200

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gtcttgcacg agtggtgctg gaattccat ccaccaaact cacaaggcaag cacgctattg 1260
 ttggcattga atactgttct gttgcttcta ttggcattga cgtagctatc tggttcggtc 1320
 gccctcgcca aaagccatct tcgtaccacc agctctatgg aaaaaaaagct caactga 1377

<210> 33

<211> 458

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 33

Met	Glu	Gly	Glu	Gln	Ser	Pro	Gln	Gly	Glu	Lys	Ser	Leu	Gln	Arg	Lys
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Gln	Phe	Val	Arg	Pro	Pro	Leu	Asp	Leu	Trp	Gln	Asp	Leu	Lys	Asp	Gly
														30	
Val	Arg	Tyr	Val	Ile	Phe	Asp	Cys	Arg	Ala	Asn	Leu	Ile	Val	Met	Pro
														45	
Leu	Leu	Ile	Leu	Phe	Glu	Ser	Met	Leu	Cys	Lys	Ile	Ile	Ile	Lys	Lys
														60	
Val	Ala	Tyr	Thr	Glu	Ile	Asp	Tyr	Lys	Ala	Tyr	Met	Glu	Gln	Ile	Glu
														80	
Met	Ile	Gln	Leu	Asp	Gly	Met	Leu	Asp	Tyr	Ser	Gln	Val	Ser	Gly	Gly
														95	
Thr	Gly	Pro	Leu	Val	Tyr	Pro	Ala	Gly	His	Val	Leu	Ile	Tyr	Lys	Met
														110	
Met	Tyr	Trp	Leu	Thr	Glu	Gly	Met	Asp	His	Val	Glu	Arg	Gly	Gln	Val
														125	
Phe	Phe	Arg	Tyr	Leu	Tyr	Leu	Leu	Thr	Leu	Ala	Leu	Gln	Met	Ala	Cys
														140	
Tyr	Tyr	Leu	Leu	His	Leu	Pro	Pro	Trp	Cys	Val	Val	Leu	Ala	Cys	Leu
														160	
Ser	Lys	Arg	Leu	His	Ser	Ile	Tyr	Val	Leu	Arg	Leu	Phe	Asn	Asp	Cys
														175	
Phe	Thr	Thr	Leu	Phe	Met	Val	Val	Thr	Val	Leu	Gly	Ala	Ile	Val	Ala
														190	
Ser	Arg	Cys	His	Gln	Arg	Pro	Lys	Leu	Lys	Lys	Ser	Leu	Ala	Leu	Val
														205	
Ile	Ser	Ala	Thr	Tyr	Ser	Met	Ala	Val	Ser	Ile	Lys	Met	Asn	Ala	Leu

210	215	220
Leu Tyr Phe Pro Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala		
225	230	235
Asn Val Ile Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln		
245	250	255
Val Ala Val Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu		
260	265	270
His Cys Ala Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile		
275	280	285
Asn Trp Gln Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe His		
290	295	300
Leu Ala Leu Leu Ile Ser His Leu Ile Ala Leu Thr Thr Leu Phe Val		
305	310	315
Thr Arg Tyr Pro Arg Ile Leu Pro Asp Leu Trp Ser Ser Leu Cys His		
325	330	335
Pro Leu Arg Lys Asn Ala Val Leu Asn Ala Asn Pro Ala Lys Thr Ile		
340	345	350
Pro Phe Val Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser Arg		
355	360	365
Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Ile		
370	375	380
Leu Ile Phe Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp Tyr		
385	390	395
Val Leu His Glu Trp Cys Trp Asn Ser Tyr Pro Pro Asn Ser Gln Ala		
405	410	415
Ser Thr Leu Leu Leu Ala Leu Asn Thr Val Leu Leu Leu Leu Ala		
420	425	430
Leu Thr Gln Leu Ser Gly Ser Val Ala Leu Ala Lys Ser His Leu Arg		
435	440	445
Thr Thr Ser Ser Met Glu Lys Lys Leu Asn		
450	455	

<210> 34
 <211> 1395
 <212> DNA
 <213> Pichia pastoris

<400> 34

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 cttttatggt tagctgattc cattgttatac aagggtatca ttggcactgt ttcctacaca 180
 gatattgatt tttcttcata tatgcaacaa atcttaaaa ttcgacaagg agaatttagat 240
 tatagcaaca tatttggta caccggtcca ttggtttacc cagccggcca tgttcatgct 300
 tactcagtac tttcggtgt cagtgtatggt ggagaagacg tcagttcgt tcaacaagca 360
 tttgggttgt tatacctagg ttgcttgtta ctatccatca gtcctactt tttctctggc 420
 ttagggaaaa tacctccggt ttattttgtt ttgttggtag cgtccaagag actgcattca 480
 atatttgtat tgagactctt caatgactgt ttaacaacat tttgtatgtt ggcaactata 540
 atcatccttc aacaagcaag tagctggagg aaagatggca caactattcc attatctgtc 600
 cctgatgctg cagatacgtc cagtttagcc atctctgtaa agatgaatgc gctgctatac 660
 ctcccagcat tcctactact catatatctc atttgtgacg aaaatttgat taaagccttg 720
 gcacctgttc tagtttgat attggtgcaa gtaggagtcg gttattcggtt cattttaccc 780
 ttgcactatg atgatcaggc aaatgaaatt cgttctgcct actttagaca ggctttgac 840
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 ttcaacaatg tccattttca ccagtcctg tttctctcc atattattac gttagtcttg 960
 ttcatcctca agttcctctc tcctaaaaac attggaaaac cgcttggtag atttgtgttg 1020
 gacattttca aattttggaa gccaacctta tctccaacca atattatcaa cgaccgagaa 1080
 agaagcccag attttctta caccgtcatg gctactacca acttaatagg ggtgcttttt 1140
 gcaagatctt tacactacca gttcctaagc tggtatgcgt tctcttgcc atatctcctt 1200
 tacaaggctc gtctgaactt tatagcatct attattgttt atgcccgtca cgagtattgc 1260
 tggttggttt tcccagctac agaacaagt tccgcgttgt tggtatctat cttactactt 1320
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 aaaaagaata cataa 1395

<210> 35

<211> 464

<212> PRT

<213> *Pichia pastoris*

<400> 35

Met Pro Pro Ile Glu Pro Ala Glu Arg Pro Lys Leu Thr Leu Lys Asn

1

5

10

15

Val Ile Gly Asp Leu Val Ala Leu Ile Gln Asn Val Leu Phe Asn Pro

20

25

30

Asp Phe Ser Val Phe Val Ala Pro Leu Leu Trp Leu Ala Asp Ser Ile
 35 40 45
 Val Ile Lys Val Ile Ile Gly Thr Val Ser Tyr Thr Asp Ile Asp Phe
 50 55 60
 Ser Ser Tyr Met Gln Gln Ile Phe Lys Ile Arg Gln Gly Glu Leu Asp
 65 70 75 80
 Tyr Ser Asn Ile Phe Gly Asp Thr Gly Pro Leu Val Tyr Pro Ala Gly
 85 90 95
 His Val His Ala Tyr Ser Val Leu Ser Trp Tyr Ser Asp Gly Gly Glu
 100 105 110
 Asp Val Ser Phe Val Gln Gln Ala Phe Gly Trp Leu Tyr Leu Gly Cys
 115 120 125
 Leu Leu Leu Ser Ile Ser Ser Tyr Phe Phe Ser Gly Leu Gly Lys Ile
 130 135 140
 Pro Pro Val Tyr Phe Val Leu Leu Val Ala Ser Lys Arg Leu His Ser
 145 150 155 160
 Ile Phe Val Leu Arg Leu Phe Asn Asp Cys Leu Thr Thr Phe Leu Met
 165 170 175
 Leu Ala Thr Ile Ile Leu Gln Gln Ala Ser Ser Trp Arg Lys Asp
 180 185 190
 Gly Thr Thr Ile Pro Leu Ser Val Pro Asp Ala Ala Asp Thr Tyr Ser
 195 200 205
 Leu Ala Ile Ser Val Lys Met Asn Ala Leu Leu Tyr Leu Pro Ala Phe
 210 215 220
 Leu Leu Leu Ile Tyr Leu Ile Cys Asp Glu Asn Leu Ile Lys Ala Leu
 225 230 235 240
 Ala Pro Val Leu Val Leu Ile Leu Val Gln Val Gly Val Gly Tyr Ser
 245 250 255
 Phe Ile Leu Pro Leu His Tyr Asp Asp Gln Ala Asn Glu Ile Arg Ser
 260 265 270
 Ala Tyr Phe Arg Gln Ala Phe Asp Phe Ser Arg Gln Phe Leu Tyr Lys
 275 280 285
 Trp Thr Val Asn Trp Arg Phe Leu Ser Gln Glu Thr Phe Asn Asn Val
 290 295 300
 His Phe His Gln Leu Leu Phe Ala Leu His Ile Ile Thr Leu Val Leu
 305 310 315 320
 Phe Ile Leu Lys Phe Leu Ser Pro Lys Asn Ile Gly Lys Pro Leu Gly

325	330	335
Arg Phe Val Leu Asp Ile Phe Lys Phe Trp Lys Pro Thr Leu Ser Pro		
340	345	350
Thr Asn Ile Ile Asn Asp Pro Glu Arg Ser Pro Asp Phe Val Tyr Thr		
355	360	365
Val Met Ala Thr Thr Asn Leu Ile Gly Val Leu Phe Ala Arg Ser Leu		
370	375	380
His Tyr Gln Phe Leu Ser Trp Tyr Ala Phe Ser Leu Pro Tyr Leu Leu		
385	390	395
Tyr Lys Ala Arg Leu Asn Phe Ile Ala Ser Ile Ile Val Tyr Ala Ala		
405	410	415
His Glu Tyr Cys Trp Leu Val Phe Pro Ala Thr Glu Gln Ser Ser Ala		
420	425	430
Leu Leu Val Ser Ile Leu Leu Ile Leu Ile Leu Ile Phe Thr Asn		
435	440	445
Glu Gln Leu Phe Pro Ser Gln Ser Val Pro Ala Glu Lys Lys Asn Thr		
450	455	460

<210> 36
 <211> 418
 <212> PRT
 <213> *Pichia pastoris*

<220>
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 <222> (209) ... (223)
 <223> Xaa is a variable amino acid

<220>
 <221> MOD_RES
 <222> (235) ... (246)
 <223> Xaa is a variable amino acid

<400> 36
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Ile Gln Asn Val Leu Phe Asn Pro Asp Phe Ser Val Phe Val Ala Pro
 20 25 30
 Leu Leu Trp Leu Ala Asp Ser Ile Val Ile Lys Val Ile Ile Gly Thr
 35 40 45
 Val Ser Tyr Thr Asp Ile Asp Phe Ser Ser Tyr Met Gln Gln Ile Phe
 50 55 60
 Lys Ile Arg Gln Gly Glu Leu Asp Tyr Ser Asn Ile Phe Gly Asp Thr
 65 70 75 80
 Gly Pro Leu Val Tyr Pro Ala Gly His Val His Ala Tyr Ser Val Leu
 85 90 95
 Ser Trp Tyr Ser Asp Gly Gly Glu Asp Val Ser Phe Val Gln Gln Ala
 100 105 110
 Phe Gly Trp Leu Tyr Leu Gly Cys Leu Leu Leu Ser Ile Ser Ser Tyr
 115 120 125
 Phe Phe Ser Gly Leu Gly Lys Ile Pro Pro Val Tyr Phe Val Leu Leu
 130 135 140
 Val Ala Ser Lys Arg Leu His Ser Ile Phe Val Leu Arg Leu Phe Asn
 145 150 155 160
 Asp Cys Leu Thr Thr Phe Leu Met Leu Ala Thr Ile Ile Ile Leu Gln
 165 170 175
 Gln Ala Ser Ser Trp Arg Lys Asp Gly Thr Thr Ile Pro Leu Ser Val
 180 185 190
 Pro Asp Ala Ala Asp Thr Tyr Ser Leu Ala Ile Ser Val Lys Met Asn
 195 200 205
 Xaa Cys
 210 215 220
 Asp Glu Asn Leu Ile Lys Ala Leu Ala Pro Xaa Xaa Xaa Xaa Xaa Xaa
 225 230 235 240
 Xaa Xaa Xaa Xaa Xaa Xaa Tyr Ser Phe Ile Leu Pro Leu His Tyr Asp
 245 250 255
 Asp Gln Ala Asn Glu Ile Arg Ser Ala Tyr Phe Arg Gln Ala Phe Asp
 260 265 270
 Phe Ser Arg Gln Phe Leu Tyr Lys Trp Thr Val Asn Trp Arg Phe Leu
 275 280 285
 Ser Gln Glu Thr Phe Asn Asn Val His Phe His Gln Leu Leu Phe Ala
 290 295 300
 Leu His Ile Ile Thr Leu Val Leu Phe Ile Leu Lys Phe Leu Ser Pro

305	310	315	320
Lys Asn Ile Gly Lys Pro Leu Gly Arg Phe Val Leu Asp Ile Phe Lys			
325	330	335	
Phe Trp Lys Pro Thr Leu Ser Pro Thr Asn Ile Ile Asn Pro Asp Phe			
340	345	350	
Val Tyr Thr Val Met Ala Thr Thr Asn Leu Ile Gly Val Leu Phe Ala			
355	360	365	
Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr Ala Phe Ser Leu Pro			
370	375	380	
Tyr Leu Leu Tyr Lys Ala Arg Leu Asn Phe Ile Ala Ser Ile Ile Val			
385	390	395	400
Tyr Ala Ala His Glu Tyr Cys Trp Leu Val Phe Pro Ala Thr Glu Gln			
405	410	415	
Ser Ser			

<210> 37

<211> 398

<212> PRT

<213> Saccharomyces cerevisiae

<400> 37

Arg Pro Pro Leu Asp Leu Trp Gln Asp Leu Lys Asp Gly Val Arg Tyr			
1	5	10	15
Val Ile Phe Asp Cys Arg Ala Asn Leu Ile Val Met Pro Leu Leu Ile			
20	25	30	
Leu Phe Glu Ser Met Leu Cys Lys Ile Ile Ile Lys Lys Val Ala Tyr			
35	40	45	
Thr Glu Ile Asp Tyr Lys Ala Tyr Met Glu Gln Ile Glu Met Ile Gln			
50	55	60	
Leu Asp Gly Met Leu Asp Tyr Ser Gln Val Ser Gly Gly Thr Gly Pro			
65	70	75	80
Leu Val Tyr Pro Ala Gly His Val Leu Ile Tyr Lys Met Met Tyr Trp			
85	90	95	
Leu Thr Glu Gly Met Asp His Val Glu Arg Gly Gln Val Phe Phe Arg			
100	105	110	

Tyr Leu Tyr Leu Leu Thr Leu Ala Leu Gln Met Ala Cys Tyr Tyr Leu
 115 120 125
 Leu His Leu Pro Pro Trp Cys Val Val Leu Ala Cys Leu Ser Lys Arg
 130 135 140
 Leu His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Cys Phe Thr Thr
 145 150 155 160
 Leu Phe Met Val Val Thr Val Leu Gly Ala Ile Val Ala Ser Arg Cys
 165 170 175
 His Gln Arg Pro Lys Leu Lys Ser Leu Ala Leu Val Ile Ser Ala
 180 185 190
 Thr Tyr Ser Met Ala Val Ser Ile Lys Met Asn Ala Leu Leu Tyr Phe
 195 200 205
 Pro Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala Asn Val Ile
 210 215 220
 Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln Val Ala Val
 225 230 235 240
 Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu His Cys Ala
 245 250 255
 Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile Asn Trp Gln
 260 265 270
 Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe His Leu Ala Leu
 275 280 285
 Leu Ile Ser His Leu Ile Ala Leu Thr Thr Leu Phe Val Thr Arg Tyr
 290 295 300
 Pro Arg Ile Leu Pro Asp Leu Trp Ser Ser Leu Cys His Pro Leu Arg
 305 310 315 320
 Lys Asn Ala Val Leu Asn Ala Asn Pro Ala Lys Thr Ile Pro Phe Val
 325 330 335
 Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser Arg Ser Leu His
 340 345 350
 Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Ile Leu Ile Phe
 355 360 365
 Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp Tyr Val Leu His
 370 375 380
 Glu Trp Cys Trp Asn Ser Tyr Pro Pro Asn Ser Gln Ala Ser
 385 390 395

<210> 38
<211> 387
<212> PRT
<213> Pichia pastoris

<220>
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<222> (183) ... (197)
<223> Xaa is a variable amino acid

<220>
<221> MOD_RES
<222> (209) ... (220)
<223> Xaa is a variable amino acid

<400> 38
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Lys Val Ile Ile Gly Thr Val Ser Tyr Thr Asp Ile Asp Phe Ser Ser
20 25 30
Tyr Met Gln Gln Ile Phe Lys Ile Arg Gln Gly Glu Leu Asp Tyr Ser
35 40 45
Asn Ile Phe Gly Asp Thr Gly Pro Leu Val Tyr Pro Ala Gly His Val
50 55 60
His Ala Tyr Ser Val Leu Ser Trp Tyr Ser Asp Gly Gly Glu Asp Val
65 70 75 80
Ser Phe Val Gln Gln Ala Phe Gly Trp Leu Tyr Leu Gly Cys Leu Leu
85 90 95
Leu Ser Ile Ser Ser Tyr Phe Phe Ser Gly Leu Gly Lys Ile Pro Pro
100 105 110
Val Tyr Phe Val Leu Leu Val Ala Ser Lys Arg Leu His Ser Ile Phe
115 120 125
Val Leu Arg Leu Phe Asn Asp Cys Leu Thr Thr Phe Leu Met Leu Ala
130 135 140
Thr Ile Ile Ile Leu Gln Gln Ala Ser Ser Trp Arg Lys Asp Gly Thr
145 150 155 160

Thr Ile Pro Leu Ser Val Pro Asp Ala Ala Asp Thr Tyr Ser Leu Ala
 165 170 175
 Ile Ser Val Lys Met Asn Xaa
 180 185 190
 Xaa Xaa Xaa Xaa Cys Asp Glu Asn Leu Ile Lys Ala Leu Ala Pro
 195 200 205
 Xaa Tyr Ser Phe Ile
 210 215 220
 Leu Pro Leu His Tyr Asp Asp Gln Ala Asn Glu Ile Arg Ser Ala Tyr
 225 230 235 240
 Phe Arg Gln Ala Phe Asp Phe Ser Arg Gln Phe Leu Tyr Lys Trp Thr
 245 250 255
 Val Asn Trp Arg Phe Leu Ser Gln Glu Thr Phe Asn Asn Val His Phe
 260 265 270
 His Gln Leu Leu Phe Ala Leu His Ile Ile Thr Leu Val Leu Phe Ile
 275 280 285
 Pro Leu Gly Arg Phe Val Leu Asp Ile Phe Lys Phe Trp Lys Pro Thr
 290 295 300
 Leu Ser Pro Thr Asn Ile Ile Asn Asp Pro Glu Arg Ser Pro Asp Phe
 305 310 315 320
 Val Tyr Thr Val Met Ala Thr Thr Asn Leu Ile Gly Val Leu Phe Ala
 325 330 335
 Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr Ala Phe Ser Leu Pro
 340 345 350
 Tyr Leu Leu Tyr Lys Ala Arg Leu Asn Phe Ile Ala Ser Ile Ile Val
 355 360 365
 Tyr Ala Ala His Glu Tyr Cys Trp Leu Val Phe Pro Ala Thr Glu Gln
 370 375 380
 Ser Ser Ala
 385

<210> 39
 <211> 373
 <212> PRT
 <213> Neurospora crassa

<400> 39

Ser Lys Leu Ile Pro Pro Ala Leu Phe Leu Val Asp Ala Leu Leu Cys
 1 5 10 15
 Gly Leu Ile Ile Trp Lys Val Pro Tyr Thr Glu Ile Asp Trp Ala Ala
 20 25 30
 Tyr Met Glu Gln Val Ser Gln Ile Leu Ser Gly Glu Arg Asp Tyr Thr
 35 40 45
 Lys Val Arg Gly Gly Thr Gly Pro Leu Val Tyr Pro Ala Ala His Val
 50 55 60
 Tyr Ile Tyr Thr Gly Leu Tyr His Leu Thr Asp Glu Gly Arg Asn Ile
 65 70 75 80
 Leu Leu Ala Gln Gln Leu Phe Ala Gly Leu Tyr Met Val Thr Leu Ala
 85 90 95
 Val Val Met Gly Cys Tyr Trp Gln Ala Lys Ala Pro Pro Tyr Leu Phe
 100 105 110
 Pro Leu Leu Thr Leu Ser Lys Arg Leu His Ser Ile Phe Val Leu Arg
 115 120 125
 Cys Phe Asn Asp Cys Phe Ala Val Leu Phe Leu Trp Leu Ala Ile Phe
 130 135 140
 Phe Phe Gln Arg Arg Asn Trp Gln Ala Gly Ala Leu Leu Tyr Thr Leu
 145 150 155 160
 Gly Leu Gly Val Lys Met Thr Leu Leu Leu Ser Leu Pro Ala Val Gly
 165 170 175
 Ile Val Leu Phe Leu Gly Ser Gly Ser Phe Val Thr Thr Leu Gln Leu
 180 185 190
 Val Ala Thr Met Gly Leu Val Gln Ile Leu Ile Gly Val Pro Phe Leu
 195 200 205
 Ala His Tyr Pro Thr Glu Tyr Leu Ser Arg Ala Phe Glu Leu Ser Arg
 210 215 220
 Gln Phe Phe Phe Lys Trp Thr Val Asn Trp Arg Phe Val Gly Glu Glu
 225 230 235 240
 Ile Phe Leu Ser Lys Gly Phe Ala Leu Thr Leu Leu Ala Leu His Val
 245 250 255
 Leu Val Leu Gly Ile Phe Ile Thr Thr Arg Trp Ile Lys Pro Ala Arg
 260 265 270
 Lys Ser Leu Val Gln Leu Ile Ser Pro Val Leu Leu Ala Gly Lys Pro
 275 280 285

Pro Leu Thr Val Pro Glu His Arg Ala Ala Ala Arg Asp Val Thr Pro
 290 295 300
 Arg Tyr Ile Met Thr Thr Ile Leu Ser Ala Asn Ala Val Gly Leu Leu
 305 310 315 320
 Phe Ala Arg Ser Leu His Tyr Gln Phe Tyr Ala Tyr Val Ala Trp Ser
 325 330 335
 Thr Pro Phe Leu Leu Trp Arg Ala Gly Leu His Pro Val Leu Val Tyr
 340 345 350
 Leu Leu Trp Ala Val His Glu Trp Ala Trp Asn Val Phe Pro Ser Thr
 355 360 365
 Pro Ala Ser Ser Ala
 370

<210> 40
 <211> 374
 <212> PRT
 <213> Pichia pastoris

<220>
 <221> MOD_RES
 <222> (160)...(174)
 <223> Xaa is a variable amino acid

<220>
 <221> MOD_RES
 <222> (186)...(197)
 <223> Xaa is a variable amino acid

<400> 40
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 1 5 10 15
 Ile Arg Gln Gly Glu Leu Asp Tyr Ser Asn Ile Phe Gly Asp Thr Gly
 20 25 30
 Pro Leu Val Tyr Pro Ala Gly His Val His Ala Tyr Ser Val Leu Ser
 35 40 45
 Trp Tyr Ser Asp Gly Gly Glu Asp Val Ser Phe Val Gln Gln Ala Phe

50	55	60
Gly Trp Leu Tyr Leu Gly Cys Leu Leu Leu Ser Ile Ser Ser Tyr Phe		
65	70	75
Phe Ser Gly Leu Gly Lys Ile Pro Pro Val Tyr Phe Val Leu Leu Val		80
85	90	95
Ala Ser Lys Arg Leu His Ser Ile Phe Val Leu Arg Leu Phe Asn Asp		
100	105	110
Cys Leu Thr Thr Phe Leu Met Leu Ala Thr Ile Ile Ile Leu Gln Gln		
115	120	125
Ala Ser Ser Trp Arg Lys Asp Gly Thr Thr Ile Pro Leu Ser Val Pro		
130	135	140
Asp Ala Ala Asp Thr Tyr Ser Leu Ala Ile Ser Val Lys Met Asn Xaa		
145	150	155
Xaa Cys Asp		
165	170	175
Glu Asn Leu Ile Lys Ala Leu Ala Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa		
180	185	190
Xaa Xaa Xaa Xaa Xaa Tyr Ser Phe Ile Leu Pro Leu His Tyr Asp Asp		
195	200	205
Gln Ala Asn Glu Ile Arg Ser Ala Tyr Phe Arg Gln Ala Phe Asp Phe		
210	215	220
Ser Arg Gln Phe Leu Tyr Lys Trp Thr Val Asn Trp Arg Phe Leu Ser		
225	230	235
Gln Glu Thr Phe Asn Asn Val His Phe His Gln Leu Leu Phe Ala Leu		
245	250	255
His Ile Ile Thr Leu Val Leu Phe Ile Leu Lys Phe Leu Ser Pro Lys		
260	265	270
Asn Ile Gly Lys Pro Leu Gly Arg Phe Val Leu Asp Ile Phe Lys Phe		
275	280	285
Trp Lys Pro Thr Leu Ser Pro Thr Asn Ile Ile Asn Asp Pro Glu Arg		
290	295	300
Ser Pro Asp Phe Val Tyr Thr Val Met Ala Thr Thr Asn Leu Ile Gly		
305	310	315
Val Leu Phe Ala Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr Ala		
325	330	335
Phe Ser Leu Pro Tyr Leu Leu Tyr Lys Ala Arg Leu Asn Phe Ile Ala		
340	345	350

Ser Ile Ile Val Tyr Ala Ala His Glu Tyr Cys Trp Leu Val Phe Pro
 355 360 365
 Ala Thr Glu Gln Ser Ser
 370

<210> 41
 <211> 355
 <212> PRT
 <213> Schizosaccharomyces pombe

<400> 41
 Leu Leu Leu Glu Ile Pro Phe Val Phe Ala Ile Ile Ser Lys Val
 1 5 10 15
 Pro Tyr Thr Glu Ile Asp Trp Ile Ala Tyr Met Glu Gln Val Asn Ser
 20 25 30
 Phe Leu Leu Gly Glu Arg Asp Tyr Lys Ser Leu Val Gly Cys Thr Gly
 35 40 45
 Pro Leu Val Tyr Pro Gly Gly His Val Phe Leu Tyr Thr Leu Leu Tyr
 50 55 60
 Tyr Leu Thr Asp Gly Gly Thr Asn Ile Val Arg Ala Gln Tyr Ile Phe
 65 70 75 80
 Ala Phe Val Tyr Trp Ile Thr Thr Ala Ile Val Gly Tyr Leu Phe Lys
 85 90 95
 Ile Val Arg Ala Pro Phe Tyr Ile Tyr Val Leu Leu Ile Leu Ser Lys
 100 105 110
 Arg Leu His Ser Ile Phe Ile Leu Arg Leu Phe Asn Asp Gly Phe Asn
 115 120 125
 Ser Leu Phe Ser Ser Leu Phe Ile Leu Ser Ser Cys Lys Lys Lys Trp
 130 135 140
 Val Arg Ala Ser Ile Leu Leu Ser Val Ala Cys Ser Val Lys Met Ser
 145 150 155 160
 Ser Leu Leu Tyr Val Pro Ala Tyr Leu Val Leu Leu Leu Gln Ile Leu
 165 170 175
 Gly Pro Lys Lys Thr Trp Met His Ile Phe Val Ile Ile Ile Val Gln
 180 185 190
 Ile Leu Phe Ser Ile Pro Phe Leu Ala Tyr Phe Trp Ser Tyr Trp Thr

195	200	205
Gln Ala Phe Asp Phe Gly Arg Ala Phe Asp Tyr Lys Trp Thr Val Asn		
210	215	220
Trp Arg Phe Ile Pro Arg Ser Ile Phe Glu Ser Thr Ser Phe Ser Thr		
225	230	235
Ser Ile Leu Phe Leu His Val Ala Leu Leu Val Ala Phe Thr Cys Lys		
245	250	255
His Trp Asn Lys Leu Ser Arg Ala Thr Pro Phe Ala Met Val Asn Ser		
260	265	270
Met Leu Thr Leu Lys Pro Leu Pro Lys Leu Gln Leu Ala Thr Pro Asn		
275	280	285
Phe Ile Phe Thr Ala Leu Ala Thr Ser Asn Leu Ile Gly Ile Leu Cys		
290	295	300
Ala Arg Ser Leu His Tyr Gln Phe Tyr Ala Trp Phe Ala Trp Tyr Ser		
305	310	315
Pro Tyr Leu Cys Tyr Gln Ala Ser Phe Pro Ala Pro Ile Val Ile Gly		
325	330	335
Leu Trp Met Leu Gln Glu Tyr Ala Trp Asn Val Phe Pro Ser Thr Lys		
340	345	350
Leu Ser Ser		
355		

<210> 42
<211> 390
<212> PRT
<213> Pichia pastoris

<220>
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<222> (176) ... (190)
<223> Xaa is a variable amino acid

<220>
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<222> (202) ... (213)
<223> Xaa is a variable amino acid

<400> 42

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Ser Tyr Thr Asp Ile Asp Phe Ser Ser Tyr Met Gln Gln Ile Phe Lys
 20 25 30

Ile Arg Gln Gly Glu Leu Asp Tyr Ser Asn Ile Phe Gly Asp Thr Gly
 35 40 45

Pro Leu Val Tyr Pro Ala Gly His Val His Ala Tyr Ser Val Leu Ser
 50 55 60

Trp Tyr Ser Asp Gly Gly Glu Asp Val Ser Phe Val Gln Gln Ala Phe
 65 70 75 80

Gly Trp Leu Tyr Leu Gly Cys Leu Leu Ser Ile Ser Ser Tyr Phe
 85 90 95

Phe Ser Gly Leu Gly Lys Ile Pro Pro Val Tyr Phe Val Leu Leu Val
 100 105 110

Ala Ser Lys Arg Leu His Ser Ile Phe Val Leu Arg Leu Phe Asn Asp
 115 120 125

Cys Leu Thr Thr Phe Leu Met Leu Ala Thr Ile Ile Leu Gln Gln
 130 135 140

Ala Ser Ser Trp Arg Lys Asp Gly Thr Thr Ile Pro Leu Ser Val Pro
 145 150 155 160

Asp Ala Ala Asp Thr Tyr Ser Leu Ala Ile Ser Val Lys Met Asn Xaa
 165 170 175

Xaa Cys Asp
 180 185 190

Glu Asn Leu Ile Lys Ala Leu Ala Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 195 200 205

Xaa Xaa Xaa Xaa Xaa Tyr Ser Phe Ile Leu Pro Leu His Tyr Asp Asp
 210 215 220

Gln Ala Asn Glu Ile Arg Ser Ala Tyr Phe Arg Gln Ala Phe Asp Phe
 225 230 235 240

Ser Arg Gln Phe Leu Tyr Lys Trp Thr Val Asn Trp Arg Phe Leu Ser
 245 250 255

Gln Glu Thr Phe Asn Asn Val His Phe His Gln Leu Leu Phe Ala Leu
 260 265 270

His Ile Ile Thr Leu Val Leu Phe Ile Leu Lys Phe Leu Ser Pro Lys

275	280	285
Asn Ile Gly Lys Pro Leu Gly Arg Phe Val Leu Asp Ile Phe Lys Phe		
290	295	300
Trp Lys Pro Thr Leu Ser Pro Thr Asn Ile Ile Asn Asp Pro Glu Arg		
305	310	315
Ser Pro Asp Phe Val Tyr Thr Val Met Ala Thr Thr Asn Leu Ile Gly		
325	330	335
Val Leu Phe Ala Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr Ala		
340	345	350
Phe Ser Leu Pro Tyr Leu Leu Tyr Lys Ala Arg Leu Asn Phe Ile Ala		
355	360	365
Ser Ile Ile Val Tyr Ala Ala His Glu Tyr Cys Trp Leu Val Phe Pro		
370	375	380
Ala Thr Glu Gln Ser Ser		
385	390	

<210> 43
<211> 363
<212> PRT
<213> Arabidopsis thaliana

<400> 43			
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Pro Tyr Thr Lys Ile Asp Trp Asp Ala Tyr Met Ser Gln Val Ser Gly			
20	25	30	
Phe Leu Gly Gly Glu Arg Asp Tyr Gly Asn Leu Lys Gly Asp Thr Gly			
35	40	45	
Pro Leu Val Tyr Pro Ala Gly Phe Leu Tyr Val Tyr Ser Ala Val Gln			
50	55	60	
Asn Leu Thr Gly Gly Glu Val Tyr Pro Ala Gln Ile Leu Phe Gly Val			
65	70	75	80
Leu Tyr Ile Val Asn Leu Gly Ile Val Leu Ile Ile Tyr Val Lys Thr			
85	90	95	
Asp Val Val Pro Trp Trp Ala Leu Ser Leu Leu Cys Leu Ser Lys Arg			
100	105	110	

Ile His Ser Ile Phe Val Leu Arg Leu Phe Asn Asp Cys Phe Ala Met
 115 120 125
 Thr Leu Leu His Ala Ser Met Ala Leu Phe Leu Tyr Arg Lys Trp His
 130 135 140
 Leu Gly Met Leu Val Phe Ser Gly Ala Val Ser Val Lys Met Asn Val
 145 150 155 160
 Leu Leu Tyr Ala Pro Thr Leu Leu Leu Leu Leu Lys Ala Met Asn
 165 170 175
 Ile Ile Gly Val Val Ser Ala Leu Ala Gly Ala Ala Leu Ala Gln Ile
 180 185 190
 Leu Val Gly Leu Pro Phe Leu Ile Thr Tyr Pro Val Ser Tyr Ile Ala
 195 200 205
 Asn Ala Phe Asp Leu Gly Arg Val Phe Ile His Phe Trp Ser Val Asn
 210 215 220
 Phe Lys Phe Val Pro Glu Arg Val Phe Val Ser Lys Glu Phe Ala Val
 225 230 235 240
 Cys Leu Leu Ile Ala His Leu Phe Leu Leu Val Ala Phe Ala Asn Tyr
 245 250 255
 Lys Trp Cys Lys His Glu Gly Gly Ile Ile Gly Phe Met Arg Ser Arg
 260 265 270
 His Phe Phe Leu Thr Leu Pro Ser Ser Leu Ser Phe Ser Asp Val Ser
 275 280 285
 Ala Ser Arg Ile Ile Thr Lys Glu His Val Val Thr Ala Met Phe Val
 290 295 300
 Gly Asn Phe Ile Gly Ile Val Phe Ala Arg Ser Leu His Tyr Gln Phe
 305 310 315 320
 Tyr Ser Trp Tyr Phe Tyr Ser Leu Pro Tyr Leu Leu Trp Arg Thr Pro
 325 330 335
 Phe Pro Thr Trp Leu Arg Leu Ile Met Phe Leu Gly Ile Glu Leu Cys
 340 345 350
 Trp Asn Val Tyr Pro Ser Thr Pro Ser Ser Ser
 355 360

<210> 44

<211> 428

<212> DNA

<213> Kluyveromyces lactis

<400> 44

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 gaacaaattg catacatttt acttgttacc aattacattg gagtactatt tgctcgatca 180
 ttacactacc aattcctatc ttggtaccat tggacgttac cagtactatt gaattgggcc 240
 aatgttccgt atccgctatg tgtgctatgg tacctaacad atgagtggtg ctggaacagc 300
 tatccgccaa acgctactgc atccacactg ctacacgcgt gtaacacata ctgttattgg 360
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 aagctgag 428

<210> 45

<211> 141

<212> PRT

<213> Kluyveromyces lactis

<400> 45

Phe	Val	Tyr	Lys	Leu	Ile	Pro	Thr	Asn	Met	Asn	Thr	Pro	Ala	Gly	Leu
1															15
Leu	Lys	Ile	Gly	Lys	Ala	Asn	Leu	Leu	His	Pro	Phe	Thr	Asp	Ala	Val
															30
Phe	Ser	Ala	Met	Arg	Val	Asn	Ala	Glu	Gln	Ile	Ala	Tyr	Ile	Leu	Leu
															45
Val	Thr	Asn	Tyr	Ile	Gly	Val	Leu	Phe	Ala	Arg	Ser	Leu	His	Tyr	Gln
															50
Phe	Leu	Ser	Trp	Tyr	His	Trp	Thr	Leu	Pro	Val	Leu	Leu	Asn	Trp	Ala
															65
Asn	Val	Pro	Tyr	Pro	Leu	Cys	Val	Leu	Trp	Tyr	Leu	Thr	His	Glu	Trp
															85
Cys	Trp	Asn	Ser	Tyr	Pro	Pro	Asn	Ala	Thr	Ala	Ser	Thr	Leu	Leu	His
															100
Ala	Cys	Asn	Thr	Tyr	Cys	Tyr	Trp	Leu	Tyr	Ser	Glu	Asp	Pro	Gln	Thr
															115
Arg	Lys	Val	Val	Ile	Thr	Lys	Gln	His	Thr	Arg	Lys	Leu			
															130
															135
															140

<210> 46
<211> 118
<212> PRT
<213> Kluyveromyces lactis

<400> 46

Ala	Asn	Leu	Leu	His	Pro	Phe	Thr	Asp	Ala	Val	Phe	Ser	Ala	Met	Arg
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Val	Asn	Ala	Glu	Gln	Ile	Ala	Tyr	Ile	Leu	Leu	Val	Thr	Asn	Tyr	Ile
	20						25						30		
Gly	Val	Leu	Phe	Ala	Arg	Ser	Leu	His	Tyr	Gln	Phe	Leu	Ser	Trp	Tyr
	35						40						45		
His	Trp	Thr	Leu	Pro	Val	Leu	Leu	Asn	Trp	Ala	Asn	Val	Pro	Tyr	Pro
	50						55						60		
Leu	Cys	Val	Leu	Trp	Tyr	Leu	Thr	His	Glu	Trp	Cys	Trp	Asn	Ser	Tyr
	65						70						75		80
Pro	Pro	Asn	Ala	Thr	Ala	Ser	Thr	Leu	Leu	His	Ala	Cys	Asn	Thr	Tyr
		85						90						95	
Cys	Tyr	Trp	Leu	Tyr	Ser	Glu	Asp	Pro	Gln	Thr	Arg	Lys	Val	Val	Ile
		100					105						110		
Thr	Lys	Gln	His	Thr	Arg										
		115													

<210> 47
<211> 117
<212> PRT
<213> Saccharomyces cerevisiae

<400> 47

Ser	Ser	Leu	Cys	His	Pro	Leu	Arg	Lys	Asn	Ala	Val	Leu	Asn	Ala	Asn
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Pro	Ala	Lys	Thr	Ile	Pro	Phe	Val	Leu	Ile	Ala	Ser	Asn	Phe	Ile	Gly
	20						25						30		
Val	Leu	Phe	Ser	Arg	Ser	Leu	His	Tyr	Gln	Phe	Leu	Ser	Trp	Tyr	His
	35						40						45		

Trp Thr Leu Pro Ile Leu Ile Phe Trp Ser Gly Met Pro Phe Phe Val
 50 55 60
 Gly Pro Ile Trp Tyr Val Leu His Glu Trp Cys Trp Asn Ser Tyr Pro
 65 70 75 80
 Pro Asn Ser Gln Ala Ser Thr Leu Leu Leu Ala Leu Asn Thr Val Leu
 85 90 95
 Leu Leu Leu Ala Leu Thr Gln Leu Ser Gly Ser Val Ala Leu Ala
 100 105 110
 Lys Ser His Leu Arg
 115

<210> 48

<211> 113

<212> PRT

<213> Kluyveromyces lactis

<400> 48

Phe Thr Asp Ala Val Phe Ser Ala Met Arg Val Asn Ala Glu Gln Ile
 1 5 10 15
 Ala Tyr Ile Leu Leu Val Thr Asn Tyr Ile Gly Val Leu Phe Ala Arg
 20 25 30
 Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Val
 35 40 45
 Leu Leu Asn Trp Ala Asn Val Pro Tyr Pro Leu Cys Val Leu Trp Tyr
 50 55 60
 Leu Thr His Glu Trp Cys Trp Asn Ser Tyr Pro Pro Asn Ala Thr Ala
 65 70 75 80
 Ser Thr Leu Leu His Ala Cys Asn Thr Tyr Cys Tyr Trp Leu Tyr Ser
 85 90 95
 Glu Asp Pro Gln Thr Arg Lys Val Val Ile Thr Lys Gln His Thr Arg
 100 105 110
 Lys

<210> 49

<211> 106
<212> PRT
<213> Arabidopsis thaliana

<400> 49

Phe	Ser	Asp	Val	Ser	Ala	Ser	Arg	Ile	Ile	Thr	Lys	Glu	His	Val	Val
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Thr	Ala	Met	Phe	Val	Gly	Asn	Phe	Ile	Gly	Ile	Val	Phe	Ala	Arg	Ser
		20						25				30			
Leu	His	Tyr	Gln	Phe	Tyr	Ser	Trp	Tyr	Phe	Tyr	Ser	Leu	Pro	Tyr	Leu
			35					40				45			
Leu	Trp	Arg	Thr	Pro	Phe	Pro	Thr	Trp	Leu	Arg	Leu	Ile	Met	Phe	Leu
		50				55				60					
Gly	Ile	Glu	Leu	Cys	Trp	Asn	Val	Tyr	Pro	Ser	Thr	Pro	Ser	Ser	Ser
		65				70			75			80			
Gly	Leu	Leu	Leu	Cys	Leu	His	Leu	Ile	Ile	Leu	Val	Gly	Leu	Trp	Leu
			85					90				95			
Ala	Pro	Ser	Val	Asp	Pro	Tyr	Gln	Leu	Lys						
			100					105							

<210> 50
<211> 1668
<212> DNA
<213> Saccharomyces cerevisiae

<400> 50

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ttAAATTtat tggTACGTGG atttggtaaa caaacCTGGG aatattcacc cgagtattct 180
attAGATCAT gggCTTCttt attacCTTT tactgttattc ttTATCCAGT aaACAAATTt 240
actgacctAG aaAGTCATTG gaACTTTtC atcacaAGAG catgcttagg ctTTTTAGt 300
tttatcatgg aatttAAact acatcgtgaa attgcaggca gcttggcatt gcaaATCGCA 360
aatatttggA ttattttCCA attgtttAAT ccgggctggT tccatgcATC tGTGGAATTt 420
ttgccttctg ccgttgccat gttgttgtat gtaggtGCCA ccagacaACTC tctacgctat 480
ctgtccactg ggtctacttc taactttacg aaaagtttag cgtacaattt cctggctagt 540
atactaggct ggccatttGT ttAAATTtta agcttgccat tatgtttaca ttacctttc 600

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aaccatagaa ttatttctac catcagaacc gcattcgact gctgttgat attttcattg 660
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 tggAACATCT tattttacaa tgtcattaat gcaagtgagg aatctggccc aaatatttc 780
 ggggttgagc catggtacta ctatccacta aatttggta tgaatttccc actgcctgtg 840
 ctagtttag ctatTTGGG aattttccat ttgagattat ggccattatg ggcattcatta 900
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 aatagaaaagc cgattctaa aaaaggtata aagttgtcag ttttattaaat tggcaggc 1080
 caggcaatgt cacggatagt ggctttggtg aacaattaca cagctcctat agccgtctac 1140
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 gcattcatcg acggtaaaaa ttctaaagatt ttgggttagag cattttacgt accggagcca 1560
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<210> 51

<211> 555

<212> PRT

<213> Saccharomyces cerevisiae

<400> 51

Met Asn Cys Lys Ala Val Thr Ile Ser Leu Leu Leu Leu Phe Leu

1

5

10

15

Thr Arg Val Tyr Ile Gln Pro Thr Phe Ser Leu Ile Ser Asp Cys Asp

20

25

30

Glu Thr Phe Asn Tyr Trp Glu Pro Leu Asn Leu Leu Val Arg Gly Phe

35

40

45

Gly Lys Gln Thr Trp Glu Tyr Ser Pro Glu Tyr Ser Ile Arg Ser Trp

50

55

60

Ala Phe Leu Leu Pro Phe Tyr Cys Ile Leu Tyr Pro Val Asn Lys Phe

65

70

75

80

Thr Asp Leu Glu Ser His Trp Asn Phe Phe Ile Thr Arg Ala Cys Leu

85

90

95

Gly Phe Phe Ser Phe Ile Met Glu Phe Lys Leu His Arg Glu Ile Ala
 100 105 110
 Gly Ser Leu Ala Leu Gln Ile Ala Asn Ile Trp Ile Ile Phe Gln Leu
 115 120 125
 Phe Asn Pro Gly Trp Phe His Ala Ser Val Glu Leu Leu Pro Ser Ala
 130 135 140
 Val Ala Met Leu Leu Tyr Val Gly Ala Thr Arg His Ser Leu Arg Tyr
 145 150 155 160
 Leu Ser Thr Gly Ser Thr Ser Asn Phe Thr Lys Ser Leu Ala Tyr Asn
 165 170 175
 Phe Leu Ala Ser Ile Leu Gly Trp Pro Phe Val Leu Ile Leu Ser Leu
 180 185 190
 Pro Leu Cys Leu His Tyr Leu Phe Asn His Arg Ile Ile Ser Thr Ile
 195 200 205
 Arg Thr Ala Phe Asp Cys Cys Leu Ile Phe Ser Leu Thr Ala Phe Ala
 210 215 220
 Val Ile Val Thr Asp Ser Ile Phe Tyr Gly Lys Leu Ala Pro Val Ser
 225 230 235 240
 Trp Asn Ile Leu Phe Tyr Asn Val Ile Asn Ala Ser Glu Glu Ser Gly
 245 250 255
 Pro Asn Ile Phe Gly Val Glu Pro Trp Tyr Tyr Pro Leu Asn Leu
 260 265 270
 Leu Leu Asn Phe Pro Leu Pro Val Leu Val Leu Ala Ile Leu Gly Ile
 275 280 285
 Phe His Leu Arg Leu Trp Pro Leu Trp Ala Ser Leu Phe Thr Trp Ile
 290 295 300
 Ala Val Phe Thr Gln Gln Pro His Lys Glu Glu Arg Phe Leu Tyr Pro
 305 310 315 320
 Ile Tyr Gly Leu Ile Thr Leu Ser Ala Ser Ile Ala Phe Tyr Lys Val
 325 330 335
 Leu Asn Leu Phe Asn Arg Lys Pro Ile Leu Lys Lys Gly Ile Lys Leu
 340 345 350
 Ser Val Leu Leu Ile Val Ala Gly Gln Ala Met Ser Arg Ile Val Ala
 355 360 365
 Leu Val Asn Asn Tyr Thr Ala Pro Ile Ala Val Tyr Glu Gln Phe Ser
 370 375 380
 Ser Leu Asn Gln Gly Gly Val Lys Ala Pro Val Val Asn Val Cys Thr

385	390	395	400
Gly Arg Glu Trp Tyr His Phe Pro Ser Ser Phe Leu Leu Pro Asp Asn			
405	410	415	
His Arg Leu Lys Phe Val Lys Ser Gly Phe Asp Gly Leu Leu Pro Gly			
420	425	430	
Asp Phe Pro Glu Ser Gly Ser Ile Phe Lys Lys Ile Arg Thr Leu Pro			
435	440	445	
Lys Gly Met Asn Asn Lys Asn Ile Tyr Asp Thr Gly Lys Glu Trp Pro			
450	455	460	
Ile Thr Arg Cys Asp Tyr Phe Ile Asp Ile Val Ala Pro Ile Asn Leu			
465	470	475	480
Thr Lys Asp Val Phe Asn Pro Leu His Leu Met Asp Asn Trp Asn Lys			
485	490	495	
Leu Ala Cys Ala Ala Phe Ile Asp Gly Glu Asn Ser Lys Ile Leu Gly			
500	505	510	
Arg Ala Phe Tyr Val Pro Glu Pro Ile Asn Arg Ile Met Gln Ile Val			
515	520	525	
Leu Pro Lys Gln Trp Asn Gln Val Tyr Gly Val Arg Tyr Ile Asp Tyr			
530	535	540	
Cys Leu Phe Glu Lys Pro Thr Glu Thr Thr Asn			
545	550	555	

<210> 52
<211> 600
<212> DNA
<213> Pichia pastoris

<400> 52

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atttcagact gtgatgaagt gttcaactac tggagccac tcaacttcat gcttagaggg 180
tttggaaaac agacttggga gtattctcca gagtatgcc tccgatctt gtcctatcta 240
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ttctacttt tcagactact gctggttatt tttcattgg ttgcagaagt caagttgtac 360
catagttga agaaaaatgt cagcagtaag atcagttct ggtaccttct attacaacc 420
gttgctccag gaatgtctca tagcacgata gccttattac catcctctt tgctatggtt 480
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<210> 53

<211> 199

<212> PRT

<213> Pichia pastoris

<400> 53

Trp	Pro	Ser	Cys	Leu	Leu	Asp	Thr	Ser	Phe	Tyr	Ser	Asn	Gln	His	Thr
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Cys	Ser	Pro	Thr	Cys	Ser	Cys	Met	Tyr	Trp	Pro	Ile	Leu	Ser	Asp	Leu
															30
Ile	Ser	Thr	Phe	Tyr	Gly	Ile	Ile	Ser	Asp	Cys	Asp	Glu	Val	Phe	Asn
															45
Tyr	Trp	Glu	Pro	Leu	Asn	Phe	Met	Leu	Arg	Gly	Phe	Gly	Lys	Gln	Thr
															50
Trp	Glu	Tyr	Ser	Pro	Glu	Tyr	Ala	Ile	Arg	Ser	Trp	Ser	Tyr	Leu	Val
															60
65															
Pro	Leu	Trp	Ile	Ala	Gly	Tyr	Pro	Pro	Leu	Phe	Leu	Asp	Ile	Pro	Ser
															85
Tyr	Tyr	Phe	Phe	Tyr	Phe	Phe	Arg	Leu	Leu	Leu	Val	Ile	Phe	Ser	Leu
															100
100															110
Val	Ala	Glu	Val	Lys	Leu	Tyr	His	Ser	Leu	Lys	Lys	Asn	Val	Ser	Ser
															115
115															120
Lys	Ile	Ser	Phe	Trp	Tyr	Leu	Leu	Phe	Thr	Thr	Val	Ala	Pro	Gly	Met
															130
130															135
Ser	His	Ser	Thr	Ile	Ala	Leu	Leu	Pro	Ser	Ser	Phe	Ala	Met	Val	Cys
															145
145															150
His	Thr	Phe	Ala	Ile	Arg	Tyr	Val	Ile	Asp	Tyr	Leu	Gln	Leu	Pro	Thr
															165
165															170
Leu	Met	Arg	Thr	Ile	Arg	Glu	Thr	Ala	Ala	Ile	Ser	Pro	Ala	His	Lys
															180
Gln	Gln	Leu	Ala	Asn	Ser	Leu									
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<210> 54
<211> 140
<212> PRT
<213> Pichia pastoris

<220>
<221> MOD_RES
<222> (65) ... (71)
<223> Xaa is a variable amino acid

<400> 54
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Trp Glu Tyr Ser Pro Glu Tyr Ala Ile Arg Ser Trp Ser Tyr Leu Val
 35          40          45
Pro Leu Trp Ile Ala Gly Tyr Pro Pro Leu Phe Leu Asp Ile Pro Ser
 50          55          60
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Arg Leu Leu Leu Val Ile Phe Ser Leu
 65          70          75          80
Val Ala Glu Val Lys Leu Tyr His Ser Leu Lys Lys Asn Val Ser Ser
 85          90          95
Lys Ile Ser Phe Trp Tyr Leu Leu Phe Thr Thr Val Ala Pro Gly Met
100         105         110
Ser His Ser Thr Ile Ala Leu Leu Pro Ser Ser Phe Ala Met Val Cys
115         120         125
His Thr Phe Ala Ile Arg Tyr Val Ile Asp Tyr Leu
130         135         140

<210> 55
<211> 141
<212> PRT
<213> Saccharomyces cerevisiae

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<400> 55

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Tyr	Trp	Glu	Pro	Leu	Asn	Leu	Leu	Val	Arg	Gly	Phe	Gly	Lys	Gln	Thr
				20				25						30	
Trp	Glu	Tyr	Ser	Pro	Glu	Tyr	Ser	Ile	Arg	Ser	Trp	Ala	Phe	Leu	Leu
				35				40					45		
Pro	Phe	Tyr	Cys	Ile	Leu	Tyr	Pro	Val	Asn	Lys	Phe	Thr	Asp	Leu	Glu
	50				55					60					
Ser	His	Trp	Asn	Phe	Phe	Ile	Thr	Arg	Ala	Cys	Leu	Gly	Phe	Phe	Ser
65					70				75					80	
Phe	Ile	Met	Glu	Phe	Lys	Leu	His	Arg	Glu	Ile	Ala	Gly	Ser	Leu	Ala
				85				90					95		
Leu	Gln	Ile	Ala	Asn	Ile	Trp	Ile	Ile	Phe	Gln	Leu	Phe	Asn	Pro	Gly
					100			105					110		
Trp	Phe	His	Ala	Ser	Val	Glu	Leu	Leu	Pro	Ser	Ala	Val	Ala	Met	Leu
					115			120				125			
Leu	Tyr	Val	Gly	Ala	Thr	Arg	His	Ser	Leu	Arg	Tyr	Leu			
				130			135				140				

<210> 56

<211> 127

<212> PRT

<213> Pichia pastoris

<220>

<221> MOD_RES

<222> (66) ... (72)

<223> Xaa is a variable amino acid

<400> 56

Leu	Ile	Ser	Thr	Phe	Tyr	Gly	Ile	Ile	Ser	Asp	Cys	Asp	Glu	Val	Phe
1				5				10						15	
Asn	Tyr	Trp	Glu	Pro	Leu	Asn	Phe	Met	Leu	Arg	Gly	Phe	Gly	Lys	Gln
				20				25						30	
Thr	Trp	Glu	Tyr	Ser	Pro	Glu	Tyr	Ala	Ile	Arg	Ser	Trp	Ser	Tyr	Leu

35	40	45
Val Pro Leu Trp Ile Ala Gly Tyr Pro Pro Leu Phe Leu Asp Ile Pro		
50	55	60
Ser Xaa Xaa Xaa Xaa Xaa Xaa Arg Leu Leu Leu Val Ile Phe Ser		
65	70	75
Leu Val Ala Glu Val Lys Leu Tyr His Ser Leu Lys Lys Asn Val Ser		
85	90	95
Ser Lys Ile Ser Phe Trp Tyr Leu Leu Phe Thr Thr Val Ala Pro Gly		
100	105	110
Met Ser His Ser Thr Ile Ala Leu Leu Pro Ser Ser Phe Ala Met		
115	120	125

<210> 57

<211> 127

<212> PRT

<213> Anopheles gambiae

<400> 57

Leu Gln Ser Ala Leu Tyr Ser Ile Ile Ser Asp Cys Asp Glu Thr Tyr		
1	5	10
Asn Tyr Trp Glu Pro Leu His Tyr Leu Leu Lys Gly Lys Gly Phe Gln		
20	25	30
Thr Trp Glu Tyr Ser Pro Glu Phe Ala Leu Arg Ser Tyr Ser Tyr Leu		
35	40	45
Trp Leu His Gly Leu Pro Ala Lys Val Leu Gln Leu Met Thr Asp Asn		
50	55	60
Gly Val Leu Ile Phe Tyr Phe Val Arg Cys Leu Leu Ala Val Thr Cys		
65	70	75
Ala Leu Leu Glu Tyr Arg Leu Tyr Arg Ile Leu Gly Arg Lys Cys Gly		
85	90	95
Gly Gly Val Ala Ser Leu Trp Leu Leu Phe Gln Leu Thr Ser Ala Gly		
100	105	110
Met Phe Ile Ser Ser Ala Ala Leu Leu Pro Ser Ser Phe Ser Met		
115	120	125

<210> 58
<211> 157
<212> PRT
<213> *Pichia pastoris*

<220>
<221> MOD_RES
<222> (66) ... (72)
<223> Xaa is a variable amino acid

<400> 58

Leu	Ile	Ser	Thr	Phe	Tyr	Gly	Ile	Ile	Ser	Asp	Cys	Asp	Glu	Val	Phe
1				5				10					15		
Asn	Tyr	Trp	Glu	Pro	Leu	Asn	Phe	Met	Leu	Arg	Gly	Phe	Gly	Lys	Gln
					20			25					30		
Thr	Trp	Glu	Tyr	Ser	Pro	Glu	Tyr	Ala	Ile	Arg	Ser	Trp	Ser	Tyr	Leu
					35			40					45		
Val	Pro	Leu	Trp	Ile	Ala	Gly	Tyr	Pro	Pro	Leu	Phe	Leu	Asp	Ile	Pro
					50			55				60			
Ser	Xaa	Arg	Leu	Leu	Leu	Val	Ile	Phe	Ser						
	65					70			75				80		
Leu	Val	Ala	Glu	Val	Lys	Leu	Tyr	His	Ser	Leu	Lys	Lys	Asn	Val	Ser
					85			90				95			
Ser	Lys	Ile	Ser	Phe	Trp	Tyr	Leu	Leu	Phe	Thr	Thr	Val	Ala	Pro	Gly
					100			105				110			
Met	Ser	His	Ser	Thr	Ile	Ala	Leu	Leu	Pro	Ser	Ser	Phe	Ala	Met	Val
					115			120				125			
Cys	His	Thr	Phe	Ala	Ile	Arg	Tyr	Val	Ile	Asp	Tyr	Leu	Gln	Leu	Pro
					130			135				140			
Thr	Leu	Met	Arg	Thr	Ile	Arg	Glu	Thr	Ala	Ala	Ile	Ser			
					145			150				155			

<210> 59
<211> 154
<212> PRT
<213> *Schizosaccharomyces pombe*

<400> 59

Leu	Thr	Ser	Ala	Ser	Phe	Arg	Val	Ile	Asp	Asp	Cys	Asp	Glu	Val	Tyr
1					5				10						15
Asn	Tyr	Trp	Glu	Pro	Leu	His	Tyr	Leu	Leu	Tyr	Gly	Tyr	Gly	Leu	Gln
					20				25						30
Thr	Trp	Glu	Tyr	Ser	Pro	Glu	Tyr	Ala	Ile	Arg	Ser	Trp	Phe	Tyr	Ile
					35				40						45
Ala	Leu	His	Ala	Val	Pro	Gly	Phe	Leu	Ala	Arg	Gly	Leu	Gly	Leu	Ser
					50				55						60
Arg	Leu	His	Val	Phe	Tyr	Phe	Ile	Arg	Gly	Val	Leu	Ala	Cys	Phe	Ser
					65				70						80
Ala	Phe	Cys	Glu	Thr	Asn	Leu	Ile	Leu	Ala	Val	Ala	Arg	Asn	Phe	Asn
					85				90						95
Arg	Ala	Val	Ala	Leu	His	Leu	Thr	Ser	Val	Leu	Phe	Val	Asn	Ser	Gly
					100				105						110
Met	Trp	Ser	Ala	Ser	Thr	Ser	Phe	Leu	Pro	Ser	Ser	Phe	Ala	Met	Asn
					115				120						125
Met	Val	Thr	Leu	Ala	Leu	Ser	Ala	Gln	Leu	Ser	Pro	Pro	Ser	Thr	Lys
					130				135						140
Arg	Thr	Val	Lys	Val	Val	Ser	Phe	Ile	Thr						
					145				150						

<210> 60
<211> 141
<212> PRT
<213> Pichia pastoris

<220>
<221> MOD_RES
<222> (80) ... (86)
<223> Xaa is a variable amino acid

<400> 60

Ser	Pro	Thr	Cys	Ser	Cys	Met	Tyr	Trp	Pro	Ile	Leu	Ser	Asp	Leu	Ile
1									10						15

Ser Thr Phe Tyr Gly Ile Ile Ser Asp Cys Asp Glu Val Phe Asn Tyr
 20 25 30
 Trp Glu Pro Leu Asn Phe Met Leu Arg Gly Phe Gly Lys Gln Thr Trp
 35 40 45
 Glu Tyr Ser Pro Glu Tyr Ala Ile Arg Ser Trp Ser Tyr Leu Val Pro
 50 55 60
 Leu Trp Ile Ala Gly Tyr Pro Pro Leu Phe Leu Asp Ile Pro Ser Xaa
 65 70 75 80
 Xaa Xaa Xaa Xaa Xaa Xaa Arg Leu Leu Leu Val Ile Phe Ser Leu Val
 85 90 95
 Ala Glu Val Lys Leu Tyr His Ser Leu Lys Lys Asn Val Ser Ser Lys
 100 105 110
 Ile Ser Phe Trp Tyr Leu Leu Phe Thr Thr Val Ala Pro Gly Met Ser
 115 120 125
 His Ser Thr Ile Ala Leu Leu Pro Ser Ser Phe Ala Met
 130 135 140

<210> 61

<211> 143

<212> PRT

<213> Mus musculus

<400> 61

Ala Pro Glu Gly Ser Thr Ala Phe Lys Cys Leu Leu Ser Ala Arg Leu
 1 5 10 15
 Cys Ala Ala Leu Leu Ser Asn Ile Ser Asp Cys Asp Glu Thr Phe Asn
 20 25 30
 Tyr Trp Glu Pro Thr His Tyr Leu Ile Tyr Gly Lys Gly Phe Gln Thr
 35 40 45
 Trp Glu Tyr Ser Pro Val Tyr Ala Ile Arg Ser Tyr Ala Tyr Leu Leu
 50 55 60
 Leu His Ala Trp Pro Ala Ala Phe His Ala Arg Ile Leu Gln Thr Asn
 65 70 75 80
 Lys Ile Leu Val Phe Tyr Phe Leu Arg Cys Leu Leu Ala Phe Val Ser
 85 90 95
 Cys Val Cys Glu Leu Tyr Phe Tyr Lys Ala Val Cys Lys Lys Phe Gly

100	105	110
Leu His Val Ser Arg Met Met Leu Ala Phe Leu Val Leu Ser Thr Gly		
115	120	125
Met Phe Cys Ser Ser Ala Phe Leu Pro Ser Ser Phe Cys Met		
130	135	140

<210> 62
<211> 141
<212> PRT
<213> Pichia pastoris

<220>
<221> MOD_RES
<222> (80) ... (86)
<223> Xaa is a variable amino acid

<400> 62			
Ser Pro Thr Cys Ser Cys Met Tyr Trp Pro Ile Leu Ser Asp Leu Ile			
1	5	10	15
Ser Thr Phe Tyr Gly Ile Ile Ser Asp Cys Asp Glu Val Phe Asn Tyr			
20	25	30	
Trp Glu Pro Leu Asn Phe Met Leu Arg Gly Phe Gly Lys Gln Thr Trp			
35	40	45	
Glu Tyr Ser Pro Glu Tyr Ala Ile Arg Ser Trp Ser Tyr Leu Val Pro			
50	55	60	
Leu Trp Ile Ala Gly Tyr Pro Pro Leu Phe Leu Asp Ile Pro Ser Xaa			
65	70	75	80
Xaa Xaa Xaa Xaa Xaa Xaa Arg Leu Leu Leu Val Ile Phe Ser Leu Val			
85	90	95	
Ala Glu Val Lys Leu Tyr His Ser Leu Lys Lys Asn Val Ser Ser Lys			
100	105	110	
Ile Ser Phe Trp Tyr Leu Leu Phe Thr Thr Val Ala Pro Gly Met Ser			
115	120	125	
His Ser Thr Ile Ala Leu Leu Pro Ser Ser Phe Ala Met			
130	135	140	

<210> 63
<211> 143
<212> PRT
<213> Homo sapiens

<400> 63

Ala	Pro	Glu	Gly	Ser	Thr	Ala	Phe	Lys	Cys	Leu	Leu	Ser	Ala	Arg	Leu
1		5				10							15		
Cys	Ala	Ala	Leu	Leu	Ser	Asn	Ile	Ser	Asp	Cys	Asp	Glu	Thr	Phe	Asn
	20				25								30		
Tyr	Trp	Glu	Pro	Thr	His	Tyr	Leu	Ile	Tyr	Gly	Glu	Gly	Phe	Gln	Thr
	35				40								45		
Trp	Glu	Tyr	Ser	Pro	Ala	Tyr	Ala	Ile	Arg	Ser	Tyr	Ala	Tyr	Leu	Leu
	50				55							60			
Leu	His	Ala	Trp	Pro	Ala	Ala	Phe	His	Ala	Arg	Ile	Leu	Gln	Thr	Asn
	65				70						75		80		
Lys	Ile	Leu	Val	Phe	Tyr	Phe	Leu	Arg	Cys	Leu	Leu	Ala	Phe	Val	Ser
		85				90							95		
Cys	Ile	Cys	Glu	Leu	Tyr	Phe	Tyr	Lys	Ala	Val	Cys	Lys	Lys	Phe	Gly
		100				105							110		
Leu	His	Val	Ser	Arg	Met	Met	Leu	Ala	Phe	Leu	Val	Leu	Ser	Thr	Gly
		115				120							125		
Met	Phe	Cys	Ser	Ser	Ser	Ala	Phe	Leu	Pro	Ser	Ser	Phe	Cys	Met	
		130				135							140		

<210> 64
<211> 1656
<212> DNA
<213> Saccharomyces cerevisiae

<400> 64

atgcgttggc ctgtccttga tacagtgtca ttgaccgtga tttcctttca tctaattccaa 60
gctccattca ccaaggtgga agagagttt aatattcaag ccattcatga tatttttaacc 120
tacagcgtat ttgatatctc ccaatatgac cacttggaaat ttccctggagt agtcccctaga 180
acattcggttgc gtgctgtgat tattgcaatg ctttcgagac ctttatctta ctttgagttct 240

ttgatccaaa cttccaggcc tacgtctata gatgttcaat tggtcgttag ggggattgtt 300
 ggccctcacca atgggccttc ttttatctat ttaaagaatt gtttgcaga tatgtttgat 360
 gaaatcactg aaaagaaaaaa ggaagaaaaat gaagacaagg atatatacat ttacgatagc 420
 gctggtacat ggtttctttt attttaatt ggcagttcc acctcatgtt ctacagcact 480
 aggactctgc ctaattttgt catgactctg cctctaacca acgtcgcat ggggtgggtt 540
 ttattgggtc gttataatgc agctatattc ctatctgcgc tcgtggcaat tgtatTTAGA 600
 ctggaagtgt cagctctcag tgctggatt gctctatttgcgtcatctt caagaagatt 660
 tctttattcg atgctatcaa attcggtatac tttggcttgg gacttggttc cgccatcagt 720
 atcaccgttg attcatatTTT ctggcaagaa tgggtgttac ctgaggtaga tggTTTCTTG 780
 ttcaacgtgg ttgcgggttca cgcttccaag tgggtgtgg agccagttac tgcttatttc 840
 acgcattact tgagaatgtat gtttatGCCA ccaactgttt tactattgaa ttacttcggc 900
 tataaatttag cacctgcaaa attaaaaatt gtctcacttag catctctttt ccacattatc 960
 gtcttattcct ttcaacctca caaagaatgg agattcatca tctacgctgt tccatctatc 1020
 atgttgctag gtgccacagg agcagcacat ctatggaga atatgaaagt aaaaaagatt 1080
 accaatgttt tatgtttggc tatattGCCC ttatctataa tgacctcctt tttcatttca 1140
 atggcgTTCT tttatatac aagaatgaat tatccaggcg gcgaggctt aacttctttt 1200
 aatgacatga ttgtggaaaa aaatattaca aacgctacag ttcatatcag catacctcct 1260
 tgcacatgacag gtgtcacttt atttggtgaa ttgaactacg gtgtgtacgg catcaattac 1320
 gataagactg aaaatacgac tttactgcag gaaatgtggc cttccTTGA tttcttgatc 1380
 acccacgagc caaccgcctc tcaattGCCA ttgcagaata agactaccaa ccattggag 1440
 cttagttaca caacaaagat gtttactgga tttgacccaa cttacattaa gaaCTTTGTT 1500
 ttccaagaga gagtgaatgt tttgtctcta ctcaaacaga tcatttcga caagacccct 1560
 accgtttttt tgaaagaatt gacggccaaat tcgattgtta aaagcgatgt cttcttcacc 1620
 tataagagaaa tcaaacaaga tgaaaaact gattga 1656

<210> 65

<211> 551

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 65

Met Arg Trp Ser Val Leu Asp Thr Val Leu Leu Thr Val Ile Ser Phe

1

5

10

15

His Leu Ile Gln Ala Pro Phe Thr Lys Val Glu Glu Ser Phe Asn Ile

20

25

30

Gln Ala Ile His Asp Ile Leu Thr Tyr Ser Val Phe Asp Ile Ser Gln

35

40

45

Tyr Asp His Leu Lys Phe Pro Gly Val Val Pro Arg Thr Phe Val Gly
 50 55 60
 Ala Val Ile Ile Ala Met Leu Ser Arg Pro Tyr Leu Tyr Leu Ser Ser
 65 70 75 80
 Leu Ile Gln Thr Ser Arg Pro Thr Ser Ile Asp Val Gln Leu Val Val
 85 90 95
 Arg Gly Ile Val Gly Leu Thr Asn Gly Leu Ser Phe Ile Tyr Leu Lys
 100 105 110
 Asn Cys Leu Gln Asp Met Phe Asp Glu Ile Thr Glu Lys Lys Lys Glu
 115 120 125
 Glu Asn Glu Asp Lys Asp Ile Tyr Ile Tyr Asp Ser Ala Gly Thr Trp
 130 135 140
 Phe Leu Leu Phe Leu Ile Gly Ser Phe His Leu Met Phe Tyr Ser Thr
 145 150 155 160
 Arg Thr Leu Pro Asn Phe Val Met Thr Leu Pro Leu Thr Asn Val Ala
 165 170 175
 Leu Gly Trp Val Leu Leu Gly Arg Tyr Asn Ala Ala Ile Phe Leu Ser
 180 185 190
 Ala Leu Val Ala Ile Val Phe Arg Leu Glu Val Ser Ala Leu Ser Ala
 195 200 205
 Gly Ile Ala Leu Phe Ser Val Ile Phe Lys Lys Ile Ser Leu Phe Asp
 210 215 220
 Ala Ile Lys Phe Gly Ile Phe Gly Leu Gly Leu Gly Ser Ala Ile Ser
 225 230 235 240
 Ile Thr Val Asp Ser Tyr Phe Trp Gln Glu Trp Cys Leu Pro Glu Val
 245 250 255
 Asp Gly Phe Leu Phe Asn Val Val Ala Gly Tyr Ala Ser Lys Trp Gly
 260 265 270
 Val Glu Pro Val Thr Ala Tyr Phe Thr His Tyr Leu Arg Met Met Phe
 275 280 285
 Met Pro Pro Thr Val Leu Leu Leu Asn Tyr Phe Gly Tyr Lys Leu Ala
 290 295 300
 Pro Ala Lys Leu Lys Ile Val Ser Leu Ala Ser Leu Phe His Ile Ile
 305 310 315 320
 Val Leu Ser Phe Gln Pro His Lys Glu Trp Arg Phe Ile Ile Tyr Ala
 325 330 335
 Val Pro Ser Ile Met Leu Leu Gly Ala Thr Gly Ala Ala His Leu Trp

340	345	350
Glu Asn Met Lys Val Lys Lys Ile Thr Asn Val Leu Cys Leu Ala Ile		
355	360	365
Leu Pro Leu Ser Ile Met Thr Ser Phe Phe Ile Ser Met Ala Phe Leu		
370	375	380
Tyr Ile Ser Arg Met Asn Tyr Pro Gly Gly Glu Ala Leu Thr Ser Phe		
385	390	395
Asn Asp Met Ile Val Glu Lys Asn Ile Thr Asn Ala Thr Val His Ile		
405	410	415
Ser Ile Pro Pro Cys Met Thr Gly Val Thr Leu Phe Gly Glu Leu Asn		
420	425	430
Tyr Gly Val Tyr Gly Ile Asn Tyr Asp Lys Thr Glu Asn Thr Thr Leu		
435	440	445
Leu Gln Glu Met Trp Pro Ser Phe Asp Phe Leu Ile Thr His Glu Pro		
450	455	460
Thr Ala Ser Gln Leu Pro Phe Glu Asn Lys Thr Thr Asn His Trp Glu		
465	470	475
Leu Val Asn Thr Thr Lys Met Phe Thr Gly Phe Asp Pro Thr Tyr Ile		
485	490	495
Lys Asn Phe Val Phe Gln Glu Arg Val Asn Val Leu Ser Leu Leu Lys		
500	505	510
Gln Ile Ile Phe Asp Lys Thr Pro Thr Val Phe Leu Lys Glu Leu Thr		
515	520	525
Ala Asn Ser Ile Val Lys Ser Asp Val Phe Phe Thr Tyr Lys Arg Ile		
530	535	540
Lys Gln Asp Glu Lys Thr Asp		
545	550	

<210> 66
<211> 840
<212> DNA
<213> Pichia pastoris

<400> 66
tcggtcgaga atgataactg aagaactcaa aatctctcac actttcatcg ttactgtact 60
ggcaatcatt gcatttcagc ctcataaaga atggagattt atagttaca ttgttccacc 120

acttgtcata accatatcta cagtacttgc acaactaccc aggagattca caatcgtaa 180
 agttgctgtt tttctctaa gtttcggctc tttgctcata tccctgtcgt ttctttcat 240
 ctcatcgat aactaccctg ggggtgaagc tttacagcat ttgaacgaga aactccttct 300
 actggaccaa agttccctac ctgttgatata taaggttcat atggatgtcc ctgcatgcat 360
 gactgggttg actttatgg tttacttggta taactcaaaa ttgaacaatt taagaattgt 420
 ctatgataaa acagaagacg agtcgctggc cacaatctgg gattcttca attatgtcat 480
 ctccgaaatt gacttggatt cttcgactgc tcccaaatgg gagggggatt ggctgaagat 540
 tgatgttgc caaggctaca acggcatcaa taaacaatct atcaaaaata caatttcaa 600
 ttatggaata cttaaacgga tgataagaga cgcaaccaaa cttgatgttg gatttattcg 660
 tacggcttt cgatcctca taaaatttga tgataaaatta ttcatttatg agaggagcag 720
 tcaaacctga aaatatatac ctcatttggta caatttggtg taaagagtgt ggcggataga 780
 cttcttgtaa atcagggaaag ctacaattcc aattgctgca aaaaataccca atgcccataa 840

<210> 67

<211> 239

<212> PRT

<213> Pichia pastoris

<400> 67

Arg	Met	Ile	Thr	Glu	Glu	Leu	Lys	Ile	Ser	His	Thr	Phe	Ile	Val	Thr
1				5				10						15	
Val	Leu	Ala	Ile	Ile	Ala	Phe	Gln	Pro	His	Lys	Glu	Trp	Arg	Phe	Ile
								20				25		30	
Val	Tyr	Ile	Val	Pro	Pro	Leu	Val	Ile	Thr	Ile	Ser	Thr	Val	Leu	Ala
								35				40		45	
Gln	Leu	Pro	Arg	Arg	Phe	Thr	Ile	Val	Lys	Val	Ala	Val	Phe	Leu	Leu
								50				55		60	
Ser	Phe	Gly	Ser	Leu	Leu	Ile	Ser	Leu	Ser	Phe	Leu	Phe	Ile	Ser	Ser
65								70				75		80	
Tyr	Asn	Tyr	Pro	Gly	Gly	Glu	Ala	Leu	Gln	His	Leu	Asn	Glu	Lys	Leu
								85				90		95	
Leu	Leu	Leu	Asp	Gln	Ser	Ser	Leu	Pro	Val	Asp	Ile	Lys	Val	His	Met
								100				105		110	
Asp	Val	Pro	Ala	Cys	Met	Thr	Gly	Val	Thr	Leu	Phe	Gly	Tyr	Leu	Asp
								115				120		125	
Asn	Ser	Lys	Leu	Asn	Asn	Leu	Arg	Ile	Val	Tyr	Asp	Lys	Thr	Glu	Asp

130	135	140
Glu Ser Leu Asp Thr Ile Trp Asp Ser Phe Asn Tyr Val Ile Ser Glu		
145	150	155
Ile Asp Leu Asp Ser Ser Thr Ala Pro Lys Trp Glu Gly Asp Trp Leu		160
165	170	175
Lys Ile Asp Val Val Gln Gly Tyr Asn Gly Ile Asn Lys Gln Ser Ile		
180	185	190
Lys Asn Thr Ile Phe Asn Tyr Gly Ile Leu Lys Arg Met Ile Arg Asp		
195	200	205
Ala Thr Lys Leu Asp Val Gly Phe Ile Arg Thr Val Phe Arg Ser Phe		
210	215	220
Ile Lys Phe Asp Asp Lys Leu Phe Ile Tyr Glu Arg Ser Ser Gln		
225	230	235

<210> 68
<211> 239
<212> PRT
<213> *Pichia pastoris*

<220>
<221> MOD_RES
<222> (62) ... (80)
<223> Xaa is a variable amino acid

<400> 68
Arg Met Ile Thr Glu Glu Leu Lys Ile Ser His Thr Phe Ile Val Thr
1 5 10 15
Val Leu Ala Ile Ile Ala Phe Gln Pro His Lys Glu Trp Arg Phe Ile
20 25 30
Val Tyr Ile Val Pro Pro Leu Val Ile Thr Ile Ser Thr Val Leu Ala
35 40 45
Gln Leu Pro Arg Arg Phe Thr Ile Val Lys Val Ala Val Xaa Xaa Xaa
50 55 60
Xaa
65 70 75 80
Tyr Asn Tyr Pro Gly Gly Glu Ala Leu Gln His Leu Asn Glu Lys Leu

85	90	95
Leu Leu Leu Asp Gln Ser Ser Leu Pro Val Asp Ile Lys Val His Met		
100	105	110
Asp Val Pro Ala Cys Met Thr Gly Val Thr Leu Phe Gly Tyr Leu Asp		
115	120	125
Asn Ser Lys Leu Asn Asn Leu Arg Ile Val Tyr Asp Lys Thr Glu Asp		
130	135	140
Glu Ser Leu Asp Thr Ile Trp Asp Ser Phe Asn Tyr Val Ile Ser Glu		
145	150	155
Ile Asp Leu Asp Ser Ser Thr Ala Pro Lys Trp Glu Gly Asp Trp Leu		
165	170	175
Lys Ile Asp Val Val Gln Gly Tyr Asn Gly Ile Asn Lys Gln Ser Ile		
180	185	190
Lys Asn Thr Ile Phe Asn Tyr Gly Ile Leu Lys Arg Met Ile Arg Asp		
195	200	205
Ala Thr Lys Leu Asp Val Gly Phe Ile Arg Thr Val Phe Arg Ser Phe		
210	215	220
Ile Lys Phe Asp Asp Lys Leu Phe Ile Tyr Glu Arg Ser Ser Gln		
225	230	235

<210> 69

<211> 245

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 69

Lys Leu Ala Pro Ala Lys Leu Lys Ile Val Ser Leu Ala Ser Leu Phe		
1	5	10
His Ile Ile Val Leu Ser Phe Gln Pro His Lys Glu Trp Arg Phe Ile		
20	25	30
Ile Tyr Ala Val Pro Ser Ile Met Leu Leu Gly Ala Thr Gly Ala Ala		
35	40	45
His Leu Trp Glu Asn Met Lys Val Lys Lys Ile Thr Asn Val Leu Cys		
50	55	60
Leu Ala Ile Leu Pro Leu Ser Ile Met Thr Ser Phe Phe Ile Ser Met		
65	70	75
		80

Ala Phe Leu Tyr Ile Ser Arg Met Asn Tyr Pro Gly Gly Glu Ala Leu
 85 90 95
 Thr Ser Phe Asn Asp Met Ile Val Glu Lys Asn Ile Thr Asn Ala Thr
 100 105 110
 Val His Ile Ser Ile Pro Pro Cys Met Thr Gly Val Thr Leu Phe Gly
 115 120 125
 Glu Leu Asn Tyr Gly Val Tyr Gly Ile Asn Tyr Asp Lys Thr Glu Asn
 130 135 140
 Thr Thr Leu Leu Gln Glu Met Trp Pro Ser Phe Asp Phe Leu Ile Thr
 145 150 155 160
 His Glu Pro Thr Ala Ser Gln Leu Pro Phe Glu Asn Lys Thr Thr Asn
 165 170 175
 His Trp Glu Leu Val Asn Thr Thr Lys Met Phe Thr Gly Phe Asp Pro
 180 185 190
 Thr Tyr Ile Lys Asn Phe Val Phe Gln Glu Arg Val Asn Val Leu Ser
 195 200 205
 Leu Leu Lys Gln Ile Ile Phe Asp Lys Thr Pro Thr Val Phe Leu Lys
 210 215 220
 Glu Leu Thr Ala Asn Ser Ile Val Lys Ser Asp Val Phe Phe Thr Tyr
 225 230 235 240
 Lys Arg Ile Lys Gln
 245

<210> 70
 <211> 141
 <212> PRT
 <213> Pichia pastoris

<220>
 <221> MOD_RES
 <222> (43) ... (61)
 <223> Xaa is a variable amino acid

<400> 70
 Ile Ile Ala Phe Gln Pro His Lys Glu Trp Arg Phe Ile Val Tyr Ile
 1 5 10 15

Val Pro Pro Leu Val Ile Thr Ile Ser Thr Val Leu Ala Gln Leu Pro
 20 25 30
 Arg Arg Phe Thr Ile Val Lys Val Ala Val Xaa Xaa Xaa Xaa Xaa Xaa
 35 40 45
 Xaa Tyr Asn Tyr
 50 55 60
 Pro Gly Gly Glu Ala Leu Gln His Leu Asn Glu Lys Leu Leu Leu
 65 70 75 80
 Asp Gln Ser Ser Leu Pro Val Asp Ile Lys Val His Met Asp Val Pro
 85 90 95
 Ala Cys Met Thr Gly Val Thr Leu Phe Gly Tyr Leu Asp Asn Ser Lys
 100 105 110
 Leu Asn Asn Leu Arg Ile Val Tyr Asp Lys Thr Glu Asp Glu Ser Leu
 115 120 125
 Asp Thr Ile Trp Asp Ser Phe Asn Tyr Val Ile Ser Glu
 130 135 140

<210> 71

<211> 137

<212> PRT

<213> Schizosaccharomyces pombe

<400> 71

Val Tyr Ser Phe Leu Gly His Lys Glu Trp Arg Phe Ile Ile Tyr Ser
 1 5 10 15
 Ile Pro Trp Phe Asn Ala Ala Ser Ala Ile Gly Ala Ser Leu Cys Phe
 20 25 30
 Asn Ala Ser Lys Phe Gly Lys Lys Ile Phe Glu Ile Leu Arg Leu Met
 35 40 45
 Phe Phe Ser Gly Ile Ile Phe Gly Phe Ile Gly Ser Ser Phe Leu Leu
 50 55 60
 Tyr Val Phe Gln Tyr Ala Tyr Pro Gly Gly Leu Ala Leu Thr Arg Leu
 65 70 75 80
 Tyr Glu Ile Glu Asn His Pro Gln Val Ser Val His Met Asp Val Tyr
 85 90 95
 Pro Cys Met Thr Gly Ile Thr Arg Phe Ser Gln Leu Pro Ser Trp Tyr

100	105	110
Tyr Asp Lys Thr Glu Asp Pro Lys Met Leu Ser Asn Ser Leu Phe Ile		
115	120	125
Ser Gln Phe Asp Tyr Leu Ile Thr Glu		
130	135	

<210> 72
<211> 143
<212> PRT
<213> *Pichia pastoris*

<220>
<221> MOD_RES
<222> (45) ... (63)
<223> Xaa is a variable amino acid

<400> 72			
Leu Ala Ile Ile Ala Phe Gln Pro His Lys Glu Trp Arg Phe Ile Val			
1	5	10	15
Tyr Ile Val Pro Pro Leu Val Ile Thr Ile Ser Thr Val Leu Ala Gln			
20	25	30	
Leu Pro Arg Arg Phe Thr Ile Val Lys Val Ala Val Xaa Xaa Xaa Xaa			
35	40	45	
Xaa Tyr			
50	55	60	
Asn Tyr Pro Gly Gly Glu Ala Leu Gln His Leu Asn Glu Lys Leu Leu			
65	70	75	80
Leu Leu Asp Gln Ser Ser Leu Pro Val Asp Ile Lys Val His Met Asp			
85	90	95	
Val Pro Ala Cys Met Thr Gly Val Thr Leu Phe Gly Tyr Leu Asp Asn			
100	105	110	
Ser Lys Leu Asn Asn Leu Arg Ile Val Tyr Asp Lys Thr Glu Asp Glu			
115	120	125	
Ser Leu Asp Thr Ile Trp Asp Ser Phe Asn Tyr Val Ile Ser Glu			
130	135	140	

<210> 73
<211> 137
<212> PRT
<213> Homo sapiens

<400> 73

Met Ala Leu Tyr Ser Leu Leu Pro His Lys Glu Leu Arg Phe Ile Ile			
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Tyr Ala Phe Pro Met Leu Asn Ile Thr Ala Ala Arg Gly Cys Ser Tyr			
20	25	30	
Leu Leu Asn Asn Tyr Lys Lys Ser Trp Leu Tyr Lys Ala Gly Ser Leu			
35	40	45	
Leu Val Ile Gly His Leu Val Val Asn Ala Ala Tyr Ser Ala Thr Ala			
50	55	60	
Leu Tyr Val Ser His Phe Asn Tyr Pro Gly Gly Val Ala Met Gln Arg			
65	70	75	80
Leu His Gln Leu Val Pro Pro Gln Thr Asp Val Leu Leu His Ile Asp			
85	90	95	
Val Ala Ala Ala Gln Thr Gly Val Ser Arg Phe Leu Gln Val Asn Ser			
100	105	110	
Ala Trp Arg Tyr Asp Lys Arg Glu Asp Val Gln Pro Gly Thr Gly Met			
115	120	125	
Leu Ala Tyr Thr His Ile Leu Met Glu			
130	135		

<210> 74
<211> 1635
<212> DNA
<213> Saccharomyces cerevisiae

<400> 74

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attatctttg tatgtgctgt aatactgagg tgcacaattt gacttggtcc atattctggg 180
aaaggcagtc caccgctgtatcccgatattt gaggctcaga gacattggat ggaaattacg 240
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caacatttac cgcttctaa gtggtaactgg tatgatttgc aatactgggg attggactat 300
 ccaccattaa cagcatttca ttcgtacccct ctgggcctaa ttggatctt tttcaatcca 360
 tcctggtttg cactagaaaa gtcacgtggc tttgaatccc ccgataatgg cctgaaaaca 420
 tataatgcgtt ctactgtcat cattagcgac atattgtttt actttcctgc agtaatatac 480
 tttactaagt ggcttggtag atatcgaaac cagtcgcccc taggacaatc tattgcggca 540
 tcagcgattt ttttccaacc ttcattaatg ctcattgacc atgggcactt tcaatataat 600
 tcagtcatgc ttggccttac tgcttatgcc ataaataact tattagatga gtattatgct 660
 atggcggccg tttgtttgt cctatccatt tgttttaaac aaatggcatt gtattatgca 720
 ccgatttttt ttgcttatct attaagtcga tcattgctgt tccccaaatt taacatagct 780
 agattgacgg ttattgcgtt tgcaacactc gcaacttttgc tataatatt tgccgcattta 840
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 gccaggggca tcttcgaaga caaggttgct aacttctggc gcgttacgaa cgtgtttgta 960
 aaatacaagg aaagattcac tatacaacaa ctccagctat attcattgtat tgccaccgtg 1020
 attggtttct taccagccat gataatgaca ttacttcattc ccaaaaagca tcttctccca 1080
 tacgtgttaa tcgcattgttc gatgtcctt tttctttta gctttcaagt acatgagaaa 1140
 actatcctca tcccactttt gcctattaca ctactctact cctctactga ttggaatggt 1200
 ctatctcttg taagttggat aaacaatgtg gctttttta cgctatggcc tttgttgaaa 1260
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 aatttcagtt ttattacacc aaggttcttg ccaaaatctt taactcctgg cccttctatc 1380
 agcagcatca atagcgacta tagaagaaga agcttactgc catataatgt ggtttgaaa 1440
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 gcacctccat cgaaatatcc agacttgtgg gtgttgtga actgtgctgt tgggttcatt 1560
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<210> 75

<211> 544

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 75

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1

5

10

15

Phe Tyr Ala Ser Pro Met Tyr Asp Phe Leu Tyr Pro Phe Arg Pro Val

20

25

30

Gly Asn Gln Trp Leu Pro Glu Tyr Ile Ile Phe Val Cys Ala Val Ile

35

40

45

Leu Arg Cys Thr Ile Gly Leu Gly Pro Tyr Ser Gly Lys Gly Ser Pro
 50 55 60
 Pro Leu Tyr Gly Asp Phe Glu Ala Gln Arg His Trp Met Glu Ile Thr
 65 70 75 80
 Gln His Leu Pro Leu Ser Lys Trp Tyr Trp Tyr Asp Leu Gln Tyr Trp
 85 90 95
 Gly Leu Asp Tyr Pro Pro Leu Thr Ala Phe His Ser Tyr Leu Leu Gly
 100 105 110
 Leu Ile Gly Ser Phe Phe Asn Pro Ser Trp Phe Ala Leu Glu Lys Ser
 115 120 125
 Arg Gly Phe Glu Ser Pro Asp Asn Gly Leu Lys Thr Tyr Met Arg Ser
 130 135 140
 Thr Val Ile Ile Ser Asp Ile Leu Phe Tyr Phe Pro Ala Val Ile Tyr
 145 150 155 160
 Phe Thr Lys Trp Leu Gly Arg Tyr Arg Asn Gln Ser Pro Ile Gly Gln
 165 170 175
 Ser Ile Ala Ala Ser Ala Ile Leu Phe Gln Pro Ser Leu Met Leu Ile
 180 185 190
 Asp His Gly His Phe Gln Tyr Asn Ser Val Met Leu Gly Leu Thr Ala
 195 200 205
 Tyr Ala Ile Asn Asn Leu Leu Asp Glu Tyr Tyr Ala Met Ala Ala Val
 210 215 220
 Cys Phe Val Leu Ser Ile Cys Phe Lys Gln Met Ala Leu Tyr Tyr Ala
 225 230 235 240
 Pro Ile Phe Phe Ala Tyr Leu Leu Ser Arg Ser Leu Leu Phe Pro Lys
 245 250 255
 Phe Asn Ile Ala Arg Leu Thr Val Ile Ala Phe Ala Thr Leu Ala Thr
 260 265 270
 Phe Ala Ile Ile Phe Ala Pro Leu Tyr Phe Leu Gly Gly Leu Lys
 275 280 285
 Asn Ile His Gln Cys Ile His Arg Ile Phe Pro Phe Ala Arg Gly Ile
 290 295 300
 Phe Glu Asp Lys Val Ala Asn Phe Trp Cys Val Thr Asn Val Phe Val
 305 310 315 320
 Lys Tyr Lys Glu Arg Phe Thr Ile Gln Gln Leu Gln Leu Tyr Ser Leu
 325 330 335
 Ile Ala Thr Val Ile Gly Phe Leu Pro Ala Met Ile Met Thr Leu Leu

340	345	350
His Pro Lys Lys His Leu Leu Pro Tyr Val Leu Ile Ala Cys Ser Met		
355	360	365
Ser Phe Phe Leu Phe Ser Phe Gln Val His Glu Lys Thr Ile Leu Ile		
370	375	380
Pro Leu Leu Pro Ile Thr Leu Leu Tyr Ser Ser Thr Asp Trp Asn Val		
385	390	395
Leu Ser Leu Val Ser Trp Ile Asn Asn Val Ala Leu Phe Thr Leu Trp		
405	410	415
Pro Leu Leu Lys Lys Asp Gly Leu His Leu Gln Tyr Ala Val Ser Phe		
420	425	430
Leu Leu Ser Asn Trp Leu Ile Gly Asn Phe Ser Phe Ile Thr Pro Arg		
435	440	445
Phe Leu Pro Lys Ser Leu Thr Pro Gly Pro Ser Ile Ser Ser Ile Asn		
450	455	460
Ser Asp Tyr Arg Arg Arg Ser Leu Leu Pro Tyr Asn Val Val Trp Lys		
465	470	475
Ser Phe Ile Ile Gly Thr Tyr Ile Ala Met Gly Phe Tyr His Phe Leu		
485	490	495
Asp Gln Phe Val Ala Pro Pro Ser Lys Tyr Pro Asp Leu Trp Val Leu		
500	505	510
Leu Asn Cys Ala Val Gly Phe Ile Cys Phe Ser Ile Phe Trp Leu Trp		
515	520	525
Ser Tyr Tyr Lys Ile Phe Thr Ser Gly Ser Lys Ser Met Lys Asp Leu		
530	535	540

<210> 76
 <211> 1644
 <212> DNA
 <213> Pichia pastoris

<400> 76
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 gtagcacat acatcatcat catcttgca attctcatca gattggcagt tgggctgggc 180
 tcctattccg gttcaaacac ccctccaatg tatggggatt ttgaagctca gaggcattgg 240

atggaaatatacagcattt atccatagaa aaatggtaact tctacgactt gcaatattgg 300
gggcttgact atcctccctt gacagccttt cattcatact tctttggcaa attaggcagc 360
ttcatcaatc cagcatggtt tgcttagac gtctccagag ggtttgaatc agtggatcta 420
aaatcgtaa tgagggcgac cgcaatttc agtgagctgt tatgtttat tccagctgtc 480
atttggtatt gtcgttggat gggacttaac taccaatc aaaacgccat tgagcaaact 540
ataatagcgt ctgctattct tttcaatcca tcttaatta tcatacatca tggccacttc 600
cagtacaact cagttatgct aggtttgct ttattatcca tattaaatct gttgtacat 660
aattttgcat tagcggctat tttttcgat cttcaataa gctttaagca aatggctctc 720
tattatagcc ccatcatgtt ttttacatg ctgagtgtga gttgtggcc tttaaaaaac 780
ttcaacttgt tgagattggc tactatcagt attgcagtc tcttgactt tgcaactcta 840
ttactgcctt ttgtattagt agatggatg tcacaaattt gccaaatatt attcagagtt 900
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<210> 77

<211> 547

<212> PRT

<213> Pichia pastoris

<400> 77

Met Pro His Lys Arg Thr Pro Ser Ser Ser Leu Leu Tyr Ala Arg Ile

1

5

10

15

Pro Gly Ile Ser Phe Glu Asn Ser Pro Val Phe Asp Phe Leu Ser Pro

20

25

30

Phe Gly Pro Ala Pro Asn Gln Trp Val Ala Arg Tyr Ile Ile Ile Ile

35

40

45

Phe Ala Ile Leu Ile Arg Leu Ala Val Gly Leu Gly Ser Tyr Ser Gly
 50 55 60
 Phe Asn Thr Pro Pro Met Tyr Gly Asp Phe Glu Ala Gln Arg His Trp
 65 70 75 80
 Met Glu Ile Thr Gln His Leu Ser Ile Glu Lys Trp Tyr Phe Tyr Asp
 85 90 95
 Leu Gln Tyr Trp Gly Leu Asp Tyr Pro Pro Leu Thr Ala Phe His Ser
 100 105 110
 Tyr Phe Phe Gly Lys Leu Gly Ser Phe Ile Asn Pro Ala Trp Phe Ala
 115 120 125
 Leu Asp Val Ser Arg Gly Phe Glu Ser Val Asp Leu Lys Ser Tyr Met
 130 135 140
 Arg Ala Thr Ala Ile Leu Ser Glu Leu Leu Cys Phe Ile Pro Ala Val
 145 150 155 160
 Ile Trp Tyr Cys Arg Trp Met Gly Leu Asn Tyr Phe Asn Gln Asn Ala
 165 170 175
 Ile Glu Gln Thr Ile Ile Ala Ser Ala Ile Leu Phe Asn Pro Ser Leu
 180 185 190
 Ile Ile Ile Asp His His Phe Gln Tyr Asn Ser Val Met Leu Gly
 195 200 205
 Phe Ala Leu Leu Ser Ile Leu Asn Leu Leu Tyr Asp Asn Phe Ala Leu
 210 215 220
 Ala Ala Ile Phe Phe Val Leu Ser Ile Ser Phe Lys Gln Met Ala Leu
 225 230 235 240
 Tyr Tyr Ser Pro Ile Met Phe Phe Tyr Met Leu Ser Val Ser Cys Trp
 245 250 255
 Pro Leu Lys Asn Phe Asn Leu Leu Arg Leu Ala Thr Ile Ser Ile Ala
 260 265 270
 Val Leu Leu Thr Phe Ala Thr Leu Leu Leu Pro Phe Val Leu Val Asp
 275 280 285
 Gly Met Ser Gln Ile Gly Gln Ile Leu Phe Arg Val Phe Pro Phe Ser
 290 295 300
 Arg Gly Leu Phe Glu Asp Lys Val Ala Asn Phe Trp Cys Thr Thr Asn
 305 310 315 320
 Ile Leu Val Lys Tyr Lys Gln Leu Phe Thr Asp Lys Thr Leu Thr Arg
 325 330 335
 Ile Ser Leu Val Ala Thr Leu Ile Ala Ile Ser Pro Ser Cys Phe Ile

340	345	350
Ile Phe Thr His Pro Lys Lys Val Leu Leu Pro Trp Ala Phe Ala Ala		
355	360	365
Cys Ser Trp Ala Phe Tyr Leu Phe Ser Phe Gln Val His Glu Lys Ser		
370	375	380
Val Leu Val Pro Leu Met Pro Thr Thr Leu Leu Leu Val Glu Lys Asp		
385	390	395
Leu Asp Ile Ile Ser Met Val Cys Trp Ile Ser Asn Ile Ala Phe Phe		
405	410	415
Ser Met Trp Pro Leu Leu Lys Arg Asp Gly Leu Ala Leu Glu Tyr Phe		
420	425	430
Val Leu Gly Ile Leu Ser Asn Trp Leu Ile Gly Asn Leu Asn Trp Ile		
435	440	445
Ser Lys Trp Leu Val Pro Ser Phe Leu Ile Pro Gly Pro Thr Leu Ser		
450	455	460
Lys Lys Val Pro Lys Arg Asp Thr Lys Thr Val Val His Thr His Trp		
465	470	475
Phe Trp Gly Ser Val Thr Phe Val Ser Tyr Leu Gly Ala Thr Val Ile		
485	490	495
Gln Phe Val Asp Trp Leu Tyr Leu Pro Pro Ala Lys Tyr Pro Asp Leu		
500	505	510
Trp Val Ile Leu Asn Thr Thr Leu Ser Phe Ala Cys Phe Gly Leu Phe		
515	520	525
Trp Leu Trp Ile Asn Tyr Asn Leu Tyr Ile Leu Arg Asp Phe Lys Leu		
530	535	540
Lys Asp Ala		
545		

<210> 78
<211> 527
<212> PRT
<213> Pichia pastoris

<220>
<221> MOD_RES
<222> (23) . . . (37)

<223> Xaa is a variable amino acid

<220>

<221> MOD_RES

<222> (366)...(378)

<223> Xaa is a variable amino acid

<400> 78

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						20			25						30
Xaa	Xaa	Xaa	Xaa	Xaa	Val	Gly	Leu	Gly	Ser	Tyr	Ser	Gly	Phe	Asn	Thr
						35			40						45
Pro	Pro	Met	Tyr	Gly	Asp	Phe	Glu	Ala	Gln	Arg	His	Trp	Met	Glu	Ile
						50			55						60
Thr	Gln	His	Leu	Ser	Ile	Glu	Lys	Trp	Tyr	Phe	Tyr	Asp	Leu	Gln	Tyr
						65			70						80
Trp	Gly	Leu	Asp	Tyr	Pro	Pro	Leu	Thr	Ala	Phe	His	Ser	Tyr	Phe	Phe
						85				90					95
Gly	Lys	Leu	Gly	Ser	Phe	Ile	Asn	Pro	Ala	Trp	Phe	Ala	Leu	Asp	Val
						100			105						110
Ser	Arg	Gly	Phe	Glu	Ser	Val	Asp	Leu	Lys	Ser	Tyr	Met	Arg	Ala	Thr
												115		120	125
Ala	Ile	Leu	Ser	Glu	Leu	Leu	Cys	Phe	Ile	Pro	Ala	Val	Ile	Trp	Tyr
															130
Cys	Arg	Trp	Met	Gly	Leu	Asn	Tyr	Phe	Asn	Gln	Asn	Ala	Ile	Glu	Gln
												145		150	155
Thr	Ile	Ile	Ala	Ser	Ala	Ile	Leu	Phe	Asn	Pro	Ser	Leu	Ile	Ile	Ile
															165
Asp	His	Gly	His	Phe	Gln	Tyr	Asn	Ser	Val	Met	Leu	Gly	Phe	Ala	Leu
															180
Leu	Ser	Ile	Leu	Asn	Leu	Leu	Tyr	Asp	Asn	Phe	Ala	Leu	Ala	Ala	Ile
												195		200	205
Phe	Phe	Val	Leu	Ser	Ile	Ser	Phe	Lys	Gln	Met	Ala	Leu	Tyr	Tyr	Ser
												210		215	220
Pro	Ile	Met	Phe	Phe	Tyr	Met	Leu	Ser	Val	Ser	Cys	Trp	Pro	Leu	Lys

225	230	235	240
Asn Phe Asn Leu Leu Arg Leu Ala Thr Ile Ser Ile Ala Val Leu Leu			
245	250	255	
Thr Phe Ala Thr Leu Leu Leu Pro Phe Val Leu Val Asp Gly Met Ser			
260	265	270	
Gln Ile Gly Gln Ile Leu Phe Arg Val Phe Pro Phe Ser Arg Gly Leu			
275	280	285	
Phe Glu Asp Lys Val Ala Asn Phe Trp Cys Thr Thr Asn Ile Leu Val			
290	295	300	
Lys Tyr Lys Gln Leu Phe Thr Asp Lys Thr Leu Thr Arg Ile Ser Leu			
305	310	315	320
Val Ala Thr Leu Ile Ala Ile Ser Pro Ser Cys Phe Ile Ile Phe Thr			
325	330	335	
His Pro Lys Lys Val Leu Leu Pro Trp Ala Phe Ala Ala Cys Ser Trp			
340	345	350	
Ala Phe Tyr Leu Phe Ser Phe Gln Val His Glu Lys Ser Xaa Xaa Xaa			
355	360	365	
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Lys Asp Leu Asp Ile			
370	375	380	
Ile Ser Met Val Cys Trp Ile Ser Asn Ile Ala Phe Phe Ser Met Trp			
385	390	395	400
Pro Leu Leu Lys Arg Asp Gly Leu Ala Leu Glu Tyr Phe Val Leu Gly			
405	410	415	
Ile Leu Ser Asn Trp Leu Ile Gly Asn Leu Asn Trp Ile Ser Lys Trp			
420	425	430	
Leu Val Pro Ser Phe Leu Ile Pro Gly Pro Thr Leu Ser Lys Lys Val			
435	440	445	
Pro Lys Arg Asp Thr Lys Thr Val Val His Thr His Trp Phe Trp Gly			
450	455	460	
Ser Val Thr Phe Val Ser Tyr Leu Gly Ala Thr Val Ile Gln Phe Val			
465	470	475	480
Asp Trp Leu Tyr Leu Pro Pro Ala Lys Tyr Pro Asp Leu Trp Val Ile			
485	490	495	
Leu Asn Thr Thr Leu Ser Phe Ala Cys Phe Gly Leu Phe Trp Leu Trp			
500	505	510	
Ile Asn Tyr Asn Leu Tyr Ile Leu Arg Asp Phe Lys Leu Lys Asp			
515	520	525	

<210> 79
<211> 528
<212> PRT
<213> *Saccharomyces cerevisiae*

<400> 79

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Val	Gly	Asn	Gln	Trp	Leu	Pro	Glu	Tyr	Ile	Ile	Phe	Val	Cys	Ala	Val
									20	25				30	
Ile	Leu	Arg	Cys	Thr	Ile	Gly	Leu	Gly	Pro	Tyr	Ser	Gly	Lys	Gly	Ser
									35	40				45	
Pro	Pro	Leu	Tyr	Gly	Asp	Phe	Glu	Ala	Gln	Arg	His	Trp	Met	Glu	Ile
									50	55				60	
Thr	Gln	His	Leu	Pro	Leu	Ser	Lys	Trp	Tyr	Trp	Tyr	Asp	Leu	Gln	Tyr
									65	70				80	
Trp	Gly	Leu	Asp	Tyr	Pro	Pro	Leu	Thr	Ala	Phe	His	Ser	Tyr	Leu	Leu
									85	90				95	
Gly	Leu	Ile	Gly	Ser	Phe	Phe	Asn	Pro	Ser	Trp	Phe	Ala	Leu	Glu	Lys
									100	105				110	
Ser	Arg	Gly	Phe	Glu	Ser	Pro	Asp	Asn	Gly	Leu	Lys	Thr	Tyr	Met	Arg
									115	120				125	
Ser	Thr	Val	Ile	Ile	Ser	Asp	Ile	Leu	Phe	Tyr	Phe	Pro	Ala	Val	Ile
									130	135				140	
Tyr	Phe	Thr	Lys	Trp	Leu	Gly	Arg	Tyr	Arg	Asn	Gln	Ser	Pro	Ile	Gly
									145	150				160	
Gln	Ser	Ile	Ala	Ala	Ser	Ala	Ile	Leu	Phe	Gln	Pro	Ser	Leu	Met	Leu
									165	170				175	
Ile	Asp	His	Gly	His	Phe	Gln	Tyr	Asn	Ser	Val	Met	Leu	Gly	Leu	Thr
									180	185				190	
Ala	Tyr	Ala	Ile	Asn	Asn	Leu	Leu	Asp	Glu	Tyr	Tyr	Ala	Met	Ala	Ala
									195	200				205	
Val	Cys	Phe	Val	Leu	Ser	Ile	Cys	Phe	Lys	Gln	Met	Ala	Leu	Tyr	Tyr
									210	215				220	
Ala	Pro	Ile	Phe	Phe	Ala	Tyr	Leu	Leu	Ser	Arg	Ser	Leu	Leu	Phe	Pro

225	230	235	240
Lys Phe Asn Ile Ala Arg Leu Thr Val Ile Ala Phe Ala Thr Leu Ala			
245	250	255	
Thr Phe Ala Ile Ile Phe Ala Pro Leu Tyr Phe Leu Gly Gly Leu			
260	265	270	
Lys Asn Ile His Gln Cys Ile His Arg Ile Phe Pro Phe Ala Arg Gly			
275	280	285	
Ile Phe Glu Asp Lys Val Ala Asn Phe Trp Cys Val Thr Asn Val Phe			
290	295	300	
Val Lys Tyr Lys Glu Arg Phe Thr Ile Gln Gln Leu Gln Leu Tyr Ser			
305	310	315	320
Leu Ile Ala Thr Val Ile Gly Phe Leu Pro Ala Met Ile Met Thr Leu			
325	330	335	
Leu His Pro Lys Lys His Leu Leu Pro Tyr Val Leu Ile Ala Cys Ser			
340	345	350	
Met Ser Phe Phe Leu Phe Ser Phe Gln Val His Glu Lys Thr Ile Leu			
355	360	365	
Ile Pro Leu Leu Pro Ile Thr Leu Leu Tyr Ser Ser Thr Asp Trp Asn			
370	375	380	
Val Leu Ser Leu Val Ser Trp Ile Asn Asn Val Ala Leu Phe Thr Leu			
385	390	395	400
Trp Pro Leu Leu Lys Lys Asp Gly Leu His Leu Gln Tyr Ala Val Ser			
405	410	415	
Phe Leu Leu Ser Asn Trp Leu Ile Gly Asn Phe Ser Phe Ile Thr Pro			
420	425	430	
Arg Phe Leu Pro Lys Ser Leu Thr Pro Gly Pro Ser Ile Ser Ser Ile			
435	440	445	
Asn Ser Asp Tyr Arg Arg Arg Ser Leu Leu Pro Tyr Asn Val Val Trp			
450	455	460	
Lys Ser Phe Ile Ile Gly Thr Tyr Ile Ala Met Gly Phe Tyr His Phe			
465	470	475	480
Leu Asp Gln Phe Val Ala Pro Pro Ser Lys Tyr Pro Asp Leu Trp Val			
485	490	495	
Leu Leu Asn Cys Ala Val Gly Phe Ile Cys Phe Ser Ile Phe Trp Leu			
500	505	510	
Trp Ser Tyr Tyr Lys Ile Phe Thr Ser Gly Ser Lys Ser Met Lys Asp			
515	520	525	

<210> 80
<211> 511
<212> PRT
<213> Pichia pastoris

<220>
<221> MOD_RES
<222> (22) ... (36)
<223> Xaa is a variable amino acid

<220>
<221> MOD_RES
<222> (365) ... (377)
<223> Xaa is a variable amino acid

<400> 80
Phe Glu Asn Ser Pro Val Phe Asp Phe Leu Ser Pro Phe Gly Pro Ala
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Pro Asn Gln Trp Val Xaa
20 25 30
Xaa Xaa Xaa Xaa Val Gly Leu Gly Ser Tyr Ser Gly Phe Asn Thr Pro
35 40 45
Pro Met Tyr Gly Asp Phe Glu Ala Gln Arg His Trp Met Glu Ile Thr
50 55 60
Gln His Leu Ser Ile Glu Lys Trp Tyr Phe Tyr Asp Leu Gln Tyr Trp
65 70 75 80
Gly Leu Asp Tyr Pro Pro Leu Thr Ala Phe His Ser Tyr Phe Phe Gly
85 90 95
Lys Leu Gly Ser Phe Ile Asn Pro Ala Trp Phe Ala Leu Asp Val Ser
100 105 110
Arg Gly Phe Glu Ser Val Asp Leu Lys Ser Tyr Met Arg Ala Thr Ala
115 120 125
Ile Leu Ser Glu Leu Leu Cys Phe Ile Pro Ala Val Ile Trp Tyr Cys
130 135 140
Arg Trp Met Gly Leu Asn Tyr Phe Asn Gln Asn Ala Ile Glu Gln Thr

145	150	155	160
Ile Ile Ala Ser Ala Ile Leu Phe Asn Pro Ser Leu Ile Ile Ile Asp			
165	170	175	
His Gly His Phe Gln Tyr Asn Ser Val Met Leu Gly Phe Ala Leu Leu			
180	185	190	
Ser Ile Leu Asn Leu Leu Tyr Asp Asn Phe Ala Leu Ala Ala Ile Phe			
195	200	205	
Phe Val Leu Ser Ile Ser Phe Lys Gln Met Ala Leu Tyr Tyr Ser Pro			
210	215	220	
Ile Met Phe Phe Tyr Met Leu Ser Val Ser Cys Trp Pro Leu Lys Asn			
225	230	235	240
Phe Asn Leu Leu Arg Leu Ala Thr Ile Ser Ile Ala Val Leu Leu Thr			
245	250	255	
Phe Ala Thr Leu Leu Leu Pro Phe Val Leu Val Asp Gly Met Ser Gln			
260	265	270	
Ile Gly Gln Ile Leu Phe Arg Val Phe Pro Phe Ser Arg Gly Leu Phe			
275	280	285	
Glu Asp Lys Val Ala Asn Phe Trp Cys Thr Thr Asn Ile Leu Val Lys			
290	295	300	
Tyr Lys Gln Leu Phe Thr Asp Lys Thr Leu Thr Arg Ile Ser Leu Val			
305	310	315	320
Ala Thr Leu Ile Ala Ile Ser Pro Ser Cys Phe Ile Ile Phe Thr His			
325	330	335	
Pro Lys Lys Val Leu Leu Pro Trp Ala Phe Ala Ala Cys Ser Trp Ala			
340	345	350	
Phe Tyr Leu Phe Ser Phe Gln Val His Glu Lys Ser Xaa Xaa Xaa Xaa			
355	360	365	
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Lys Asp Leu Asp Ile Ile			
370	375	380	
Ser Met Val Cys Trp Ile Ser Asn Ile Ala Phe Phe Ser Met Trp Pro			
385	390	395	400
Leu Leu Lys Arg Asp Gly Leu Ala Leu Glu Tyr Phe Val Leu Gly Ile			
405	410	415	
Leu Ser Asn Trp Leu Ile Gly Asn Leu Asn Trp Ile Ser Lys Trp Leu			
420	425	430	
Val Pro Ser Phe Leu Ile Pro Gly Pro Thr Leu Ser Lys Lys Val Pro			
435	440	445	

Lys Arg Asp Thr Lys Thr Val Val His Thr His Trp Phe Trp Gly Ser
 450 455 460
 Val Thr Phe Val Ser Tyr Leu Gly Ala Thr Val Ile Gln Phe Val Asp
 465 470 475 480
 Trp Leu Tyr Leu Pro Pro Ala Lys Tyr Pro Asp Leu Trp Val Ile Leu
 485 490 495
 Asn Thr Thr Leu Ser Phe Ala Cys Phe Gly Leu Phe Trp Leu Trp
 500 505 510

<210> 81
<211> 480
<212> PRT
<213> Schizosaccharomyces pombe

<400> 81
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 1 5 10 15
Tyr Ser Ser Lys Phe Leu Phe Phe Pro Cys Leu Ile Met Ser Leu Val
 20 25 30
Phe Met Gln Trp Leu Ile Ser Ile Gly Pro Tyr Ser Gly Tyr Asn Thr
 35 40 45
Pro Pro Met Tyr Gly Asp Phe Glu Ala Gln Arg His Trp Met Glu Leu
 50 55 60
Thr Leu His Thr Pro Val Ser Gln Trp Tyr Phe Arg Asp Leu Gln Trp
 65 70 75 80
Trp Gly Leu Asp Tyr Pro Pro Leu Thr Ala Tyr Val Ser Trp Phe Phe
 85 90 95
Gly Ile Ile Gly His Tyr Phe Phe Asn Pro Glu Trp Phe Ala Asp Val
 100 105 110
Thr Ser Arg Gly Phe Glu Ser Leu Glu Leu Lys Leu Phe Met Arg Ser
 115 120 125
Thr Val Ile Ala Ser His Leu Leu Ile Leu Val Pro Pro Leu Met Phe
 130 135 140
Tyr Ser Lys Trp Trp Ser Arg Arg Ile Pro Asn Phe Val Asp Arg Asn
 145 150 155 160
Ala Ser Leu Ile Met Val Leu Phe Gln Pro Ala Leu Leu Ile Asp

165	170	175
His Gly His Phe Gln Tyr Asn Cys Val Met Leu Gly Leu Val Met Tyr		
180	185	190
Ala Ile Ala Asn Leu Leu Lys Asn Gln Tyr Val Ala Ala Thr Phe Phe		
195	200	205
Phe Cys Leu Ala Leu Thr Phe Lys Gln Met Ala Leu Tyr Phe Ala Pro		
210	215	220
Pro Ile Phe Phe Tyr Leu Leu Gly Thr Cys Val Lys Pro Lys Ile Arg		
225	230	235
Phe Ser Arg Phe Ile Leu Leu Ser Val Thr Val Val Phe Thr Phe Ser		
245	250	255
Leu Ile Leu Phe Pro Trp Ile Tyr Met Asp Tyr Lys Thr Leu Leu Pro		
260	265	270
Gln Ile Leu His Arg Val Phe Pro Phe Ala Arg Gly Leu Trp Glu Asp		
275	280	285
Lys Val Ala Asn Phe Trp Cys Thr Leu Asn Thr Val Phe Lys Ile Arg		
290	295	300
Glu Val Phe Thr Leu His Gln Leu Gln Val Ile Ser Leu Ile Phe Thr		
305	310	315
Leu Ile Ser Ile Leu Pro Ser Cys Val Ile Leu Phe Leu Tyr Pro Arg		
325	330	335
Lys Arg Leu Leu Ala Leu Gly Phe Ala Ser Ala Ser Trp Gly Phe Phe		
340	345	350
Leu Phe Ser Phe Gln Val His Glu Lys Ser Val Leu Leu Pro Leu Leu		
355	360	365
Pro Thr Ser Ile Leu Leu Cys His Gly Asn Ile Thr Thr Lys Pro Trp		
370	375	380
Ile Ala Leu Ala Asn Asn Leu Ala Val Phe Ser Leu Trp Pro Leu Leu		
385	390	395
Lys Lys Asp Gly Leu Gly Leu Gln Tyr Phe Thr Leu Val Leu Met Trp		
405	410	415
Asn Trp Ile Gly Asp Met Val Val Phe Ser Lys Asn Val Leu Phe Arg		
420	425	430
Phe Ile Gln Leu Ser Phe Tyr Val Gly Met Ile Val Ile Leu Gly Ile		
435	440	445
Asp Leu Phe Ile Pro Pro Pro Ser Arg Tyr Pro Asp Leu Trp Val Ile		
450	455	460

Leu Asn Val Thr Leu Ser Phe Ala Gly Phe Phe Thr Ile Tyr Leu Trp
 465 470 475 480

<210> 82

<211> 477

<212> PRT

<213> Pichia pastoris

<220>

<221> MOD_RES

<222> (329)...(341)

<223> Xaa is a variable amino acid

<400> 82

Val Gly Leu Gly Ser Tyr Ser Gly Phe Asn Thr Pro Pro Met Tyr Gly
 1 5 10 15

Asp Phe Glu Ala Gln Arg His Trp Met Glu Ile Thr Gln His Leu Ser
 20 25 30

Ile Glu Lys Trp Tyr Phe Tyr Asp Leu Gln Tyr Trp Gly Leu Asp Tyr
 35 40 45

Pro Pro Leu Thr Ala Phe His Ser Tyr Phe Phe Gly Lys Leu Gly Ser
 50 55 60

Phe Ile Asn Pro Ala Trp Phe Ala Leu Asp Val Ser Arg Gly Phe Glu
 65 70 75 80

Ser Val Asp Leu Lys Ser Tyr Met Arg Ala Thr Ala Ile Leu Ser Glu
 85 90 95

Leu Leu Cys Phe Ile Pro Ala Val Ile Trp Tyr Cys Arg Trp Met Gly
 100 105 110

Leu Asn Tyr Phe Asn Gln Asn Ala Ile Glu Gln Thr Ile Ile Ala Ser
 115 120 125

Ala Ile Leu Phe Asn Pro Ser Leu Ile Ile Asp His Gly His Phe
 130 135 140

Gln Tyr Asn Ser Val Met Leu Gly Phe Ala Leu Leu Ser Ile Leu Asn
 145 150 155 160

Leu Leu Tyr Asp Asn Phe Ala Leu Ala Ala Ile Phe Phe Val Leu Ser
 165 170 175

Ile Ser Phe Lys Gln Met Ala Leu Tyr Tyr Ser Pro Ile Met Phe Phe
 180 185 190
 Tyr Met Leu Ser Val Ser Cys Trp Pro Leu Lys Asn Phe Asn Leu Leu
 195 200 205
 Arg Leu Ala Thr Ile Ser Ile Ala Val Leu Leu Thr Phe Ala Thr Leu
 210 215 220
 Leu Leu Pro Phe Val Leu Val Asp Gly Met Ser Gln Ile Gly Gln Ile
 225 230 235 240
 Leu Phe Arg Val Phe Pro Phe Ser Arg Gly Leu Phe Glu Asp Lys Val
 245 250 255
 Ala Asn Phe Trp Cys Thr Thr Asn Ile Leu Val Lys Tyr Lys Gln Leu
 260 265 270
 Phe Thr Asp Lys Thr Leu Thr Arg Ile Ser Leu Val Ala Thr Leu Ile
 275 280 285
 Ala Ile Ser Pro Ser Cys Phe Ile Ile Phe Thr His Pro Lys Lys Val
 290 295 300
 Leu Leu Pro Trp Ala Phe Ala Ala Cys Ser Trp Ala Phe Tyr Leu Phe
 305 310 315 320
 Ser Phe Gln Val His Glu Lys Ser Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 325 330 335
 Xaa Xaa Xaa Xaa Xaa Glu Lys Asp Leu Asp Ile Ile Ser Met Val Cys
 340 345 350
 Trp Ile Ser Asn Ile Ala Phe Phe Ser Met Trp Pro Leu Leu Lys Arg
 355 360 365
 Asp Gly Leu Ala Leu Glu Tyr Phe Val Leu Gly Ile Leu Ser Asn Trp
 370 375 380
 Leu Ile Gly Asn Leu Asn Trp Ile Ser Lys Trp Leu Val Pro Ser Phe
 385 390 395 400
 Leu Ile Pro Gly Pro Thr Leu Ser Lys Val Pro Lys Arg Asp Thr
 405 410 415
 Lys Thr Val Val His Thr His Trp Phe Trp Gly Ser Val Thr Phe Val
 420 425 430
 Ser Tyr Leu Gly Ala Thr Val Ile Gln Phe Val Asp Trp Leu Tyr Leu
 435 440 445
 Pro Pro Ala Lys Tyr Pro Asp Leu Trp Val Ile Leu Asn Thr Thr Leu
 450 455 460
 Ser Phe Ala Cys Phe Gly Leu Phe Trp Leu Trp Ile Asn

465

470

475

<210> 83

<211> 448

<212> PRT

<213> Drosophila melanogaster

<400> 83

Ile	Ser	Leu	Tyr	Ser	Tyr	Ser	Gly	Phe	Asp	Ser	Pro	Pro	Met	His	Gly
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Asp	Tyr	Glu	Ala	Gln	Arg	His	Trp	Gln	Glu	Ile	Thr	Val	Asn	Leu	Ala

Val	Gly	Glu	Trp	Tyr	Thr	Asn	Ser	Ser	Asn	Asn	Asp	Leu	Gln	Tyr	Trp

Gly	Leu	Asp	Tyr	Pro	Pro	Leu	Thr	Ala	Tyr	His	Ser	Tyr	Leu	Val	Gly

Arg	Ile	Gly	Ala	Ser	Ile	Asp	Pro	Arg	Phe	Val	Glu	Leu	His	Lys	Ser

Arg	Gly	Phe	Glu	Ser	Lys	Glu	His	Lys	Arg	Phe	Met	Arg	Ala	Thr	Val

Val	Ser	Ala	Asp	Val	Leu	Ile	Tyr	Leu	Pro	Ala	Met	Leu	Leu	Leu	Ala

Tyr	Ser	Leu	Asp	Lys	Ala	Phe	Arg	Ser	Asp	Asp	Lys	Leu	Phe	Leu	Phe

Thr	Leu	Val	Ala	Ala	Tyr	Pro	Gly	Gln	Thr	Leu	Ile	Asp	Asn	Gly	His

Phe	Gln	Tyr	Asn	Asn	Ile	Ser	Leu	Gly	Phe	Ala	Ala	Val	Ala	Ile	Ala

145	150	155	160
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Ala	Ile	Leu	Arg	Arg	Arg	Phe	Tyr	Ala	Ala	Ala	Phe	Phe	Phe	Thr	Leu

165	170	175
-----	-----	-----

Ala	Leu	Asn	Tyr	Lys	Gln	Met	Glu	Leu	Tyr	His	Ser	Leu	Pro	Phe	Phe

180	185	190
-----	-----	-----

Ala	Phe	Leu	Leu	Gly	Glu	Cys	Val	Ser	Gln	Lys	Ser	Phe	Ala	Ser	Phe

195	200	205
-----	-----	-----

Ile	Ala	Glu	Ile	Ser	Arg	Ile	Ala	Ala	Val	Val	Leu	Gly	Thr	Phe	Ala

210	215	220
-----	-----	-----

Ile Leu Trp Val Pro Trp Leu Gly Ser Leu Gln Ala Val Leu Gln Val
 225 230 235 240
 Leu His Arg Leu Phe Pro Val Ala Arg Gly Val Phe Glu Asp Lys Val
 245 250 255
 Ala Asn Val Trp Cys Ala Val Asn Val Val Trp Lys Leu Lys Lys His
 260 265 270
 Ile Ser Asn Asp Gln Met Ala Leu Val Cys Ile Ala Cys Thr Leu Ile
 275 280 285
 Ala Ser Leu Pro Thr Asn Val Leu Leu Phe Arg Arg Arg Thr Asn Val
 290 295 300
 Gly Phe Leu Leu Ala Leu Phe Asn Thr Ser Leu Ala Phe Phe Leu Phe
 305 310 315 320
 Ser Phe Gln Val His Glu Lys Thr Ile Leu Leu Thr Ala Leu Pro Ala
 325 330 335
 Leu Phe Leu Leu Lys Cys Trp Pro Asp Glu Met Ile Leu Phe Leu Glu
 340 345 350
 Val Thr Val Phe Ser Met Leu Pro Leu Leu Ala Arg Asp Glu Leu Leu
 355 360 365
 Val Pro Ala Val Val Ala Thr Val Ala Phe His Leu Ile Phe Lys Cys
 370 375 380
 Phe Asp Ser Lys Ser Lys Leu Ser Asn Glu Tyr Pro Leu Lys Tyr Ile
 385 390 395 400
 Ala Asn Ile Ser Gln Ile Leu Met Ile Ser Val Val Val Ala Ser Leu
 405 410 415
 Thr Val Pro Ala Pro Thr Lys Tyr Pro Asp Leu Trp Pro Leu Ile Ile
 420 425 430
 Ser Val Thr Ser Cys Gly His Phe Phe Leu Phe Phe Leu Trp Gly Asn
 435 440 445

<210> 84
 <211> 478
 <212> PRT
 <213> Pichia pastoris

<220>
 <221> MOD_RES

<222> (324) . . . (336)

<223> Xaa is a variable amino acid

<400> 84

Tyr Ser Gly Phe Asn Thr Pro Pro Met Tyr Gly Asp Phe Glu Ala Gln
 1 5 10 15

Arg His Trp Met Glu Ile Thr Gln His Leu Ser Ile Glu Lys Trp Tyr
 20 25 30

Phe Tyr Asp Leu Gln Tyr Trp Gly Leu Asp Tyr Pro Pro Leu Thr Ala
 35 40 45

Phe His Ser Tyr Phe Phe Gly Lys Leu Gly Ser Phe Ile Asn Pro Ala
 50 55 60

Trp Phe Ala Leu Asp Val Ser Arg Gly Phe Glu Ser Val Asp Leu Lys
 65 70 75 80

Ser Tyr Met Arg Ala Thr Ala Ile Leu Ser Glu Leu Leu Cys Phe Ile
 85 90 95

Pro Ala Val Ile Trp Tyr Cys Arg Trp Met Gly Leu Asn Tyr Phe Asn
 100 105 110

Gln Asn Ala Ile Glu Gln Thr Ile Ile Ala Ser Ala Ile Leu Phe Asn
 115 120 125

Pro Ser Leu Ile Ile Ile Asp His Gly His Phe Gln Tyr Asn Ser Val
 130 135 140

Met Leu Gly Phe Ala Leu Leu Ser Ile Leu Asn Leu Leu Tyr Asp Asn
 145 150 155 160

Phe Ala Leu Ala Ala Ile Phe Phe Val Leu Ser Ile Ser Phe Lys Gln
 165 170 175

Met Ala Leu Tyr Tyr Ser Pro Ile Met Phe Phe Tyr Met Leu Ser Val
 180 185 190

Ser Cys Trp Pro Leu Lys Asn Phe Asn Leu Leu Arg Leu Ala Thr Ile
 195 200 205

Ser Ile Ala Val Leu Leu Thr Phe Ala Thr Leu Leu Pro Phe Val
 210 215 220

Leu Val Asp Gly Met Ser Gln Ile Gly Gln Ile Leu Phe Arg Val Phe
 225 230 235 240

Pro Phe Ser Arg Gly Leu Phe Glu Asp Lys Val Ala Asn Phe Trp Cys
 245 250 255

Thr Thr Asn Ile Leu Val Lys Tyr Lys Gln Leu Phe Thr Asp Lys Thr

	260	265	270
Leu Thr Arg Ile Ser Leu Val Ala Thr Leu Ile Ala Ile Ser Pro Ser			
	275	280	285
Cys Phe Ile Ile Phe Thr His Pro Lys Lys Val Leu Leu Pro Trp Ala			
	290	295	300
Phe Ala Ala Cys Ser Trp Ala Phe Tyr Leu Phe Ser Phe Gln Val His			
	305	310	315
			320
Glu Lys Ser Xaa			
	325	330	335
Glu Lys Asp Leu Asp Ile Ile Ser Met Val Cys Trp Ile Ser Asn Ile			
	340	345	350
Ala Phe Phe Ser Met Trp Pro Leu Leu Lys Arg Asp Gly Leu Ala Leu			
	355	360	365
Glu Tyr Phe Val Leu Gly Ile Leu Ser Asn Trp Leu Ile Gly Asn Leu			
	370	375	380
Asn Trp Ile Ser Lys Trp Leu Val Pro Ser Phe Leu Ile Pro Gly Pro			
	385	390	395
			400
Thr Leu Ser Lys Lys Val Pro Lys Arg Asp Thr Lys Thr Val Val His			
	405	410	415
Thr His Trp Phe Trp Gly Ser Val Thr Phe Val Ser Tyr Leu Gly Ala			
	420	425	430
Thr Val Ile Gln Phe Val Asp Trp Leu Tyr Leu Pro Pro Ala Lys Tyr			
	435	440	445
Pro Asp Leu Trp Val Ile Leu Asn Thr Thr Leu Ser Phe Ala Cys Phe			
	450	455	460
Gly Leu Phe Trp Leu Trp Ile Asn Tyr Asn Leu Tyr Ile Leu			
	465	470	475

<210> 85
<211> 459
<212> PRT
<213> Arabidopsis thaliana

<400> 85
Tyr Ser Gly Ala Gly Ile Pro Pro Lys Phe Gly Asp Phe Glu Ala Gln
1 5 10 15

Arg His Trp Met Glu Ile Thr Thr Asn Leu Pro Val Ile Asp Trp Tyr
 20 25 30

Arg Asn Gly Thr Tyr Asn Asp Leu Thr Tyr Trp Gly Leu Asp Tyr Pro
 35 40 45

Pro Leu Thr Ala Tyr Gln Ser Tyr Ile His Gly Ile Phe Leu Arg Phe
 50 55 60

Phe Asn Pro Glu Ser Val Ala Leu Leu Ser Ser Arg Gly His Glu Ser
 65 70 75 80

Tyr Leu Gly Lys Leu Leu Met Arg Trp Thr Val Leu Ser Ser Asp Ala
 85 90 95

Phe Ile Phe Phe Pro Ala Ala Leu Phe Phe Val Leu Val Tyr His Arg
 100 105 110

Asn Arg Thr Arg Gly Gly Lys Ser Glu Val Ala Trp His Ile Ala Met
 115 120 125

Ile Leu Leu Asn Pro Cys Leu Ile Ile Asp His Gly His Phe Gln
 130 135 140

Tyr Asn Cys Ile Ser Leu Gly Leu Thr Val Gly Ala Ile Ala Ala Val
 145 150 155 160

Leu Cys Glu Ser Glu Val Leu Thr Cys Val Leu Phe Ser Leu Ala Leu
 165 170 175

Ser His Lys Gln Met Ser Ala Tyr Phe Ala Pro Ala Phe Phe Ser His
 180 185 190

Leu Leu Gly Lys Cys Leu Arg Arg Lys Ser Pro Ile Leu Ser Val Ile
 195 200 205

Lys Leu Gly Ile Ala Val Ile Val Thr Phe Val Ile Phe Trp Trp Pro
 210 215 220

Tyr Val His Ser Leu Asp Asp Phe Leu Met Val Leu Ser Arg Leu Ala
 225 230 235 240

Pro Phe Glu Arg Gly Ile Tyr Glu Asp Tyr Val Ala Asn Phe Trp Cys
 245 250 255

Thr Thr Ser Ile Leu Ile Lys Trp Lys Asn Leu Phe Thr Thr Gln Ser
 260 265 270

Leu Lys Ser Ile Ser Leu Ala Ala Thr Ile Leu Ala Ser Leu Pro Ser
 275 280 285

Met Val Gln Gln Ile Leu Ser Pro Ser Asn Glu Gly Phe Leu Tyr Gly
 290 295 300

Leu Leu Asn Ser Ser Met Ala Phe Tyr Leu Phe Ser Phe Gln Val His

305	310	315	320
Glu Lys Ser Ile Leu Met Pro Phe Leu Ser Ala Thr Leu Leu Ala Leu			
325	330	335	
Lys Leu Pro Asp His Phe Ser His Leu Thr Tyr Tyr Ala Leu Phe Ser			
340	345	350	
Met Phe Pro Leu Leu Cys Arg Asp Lys Leu Leu Ile Pro Tyr Leu Thr			
355	360	365	
Leu Ser Phe Leu Phe Thr Val Ile Tyr His Ser Pro Gly Asn His His			
370	375	380	
Ala Ile Gln Lys Thr Asp Val Ser Phe Phe Ser Phe Lys Asn Phe Pro			
385	390	395	400
Gly Tyr Val Phe Leu Leu Arg Thr His Phe Phe Ile Ser Val Val Leu			
405	410	415	
His Val Leu Tyr Leu Thr Ile Lys Pro Pro Gln Lys Tyr Pro Phe Leu			
420	425	430	
Phe Glu Ala Leu Ile Met Ile Leu Cys Phe Ser Tyr Phe Ile Met Phe			
435	440	445	
Ala Phe Tyr Thr Asn Tyr Thr Gln Trp Thr Leu			
450	455		

<210> 86
 <211> 836
 <212> DNA
 <213> Kluyveromyces lactis

<400> 86

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ggataacaaga acttagtgca atcaatgcac aggatttttc catttgcag gggttatctt 120
gaagataaaag ttgcgaattt ttggtgcgtt tctaataattt tcataaataa tagaaatcta 180
ttcaactcaga aggatcttca attatactca ttactcgcaa cagttattgg gcttttacca 240
tcattcatta taacatttt atacccgaag agacatttac taccatatgc tttggccgca 300
tggatcgatgt cattttctt attcagcttc caggttcatg aaaagacaat cttattacct 360
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tggattaaca acgtggcatt gtttacactc tggccattac tgaaaaagga caatctagta 480
ttgcaatatg gagtcatgtt catgttttagc aattgggtga tcggtaactt cagtttcgtc 540
acaccacgct tcctccaaa attttgaca ccagggccat ccatcagtga tatagatgtt 600
  
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gattatagac gggcaagttt actacccaag agcctaataat ggagattaat cattgttggc 660
 tcatatattg caatggggat tattcatttt ctagactatt acgtctcccc gccatcaaaa 720
 taccctgatt tatgggtgct tgccaatgt tccttggct tctcatgttt tgtgacat 780
 tggatatgga acaattataa ttattcgaaa tgagaaacag cacttgcaa gattta 836

<210> 87

<211> 277

<212> PRT

<213> Kluyveromyces lactis

<400> 87

Ile	Ser	Val	Ser	Thr	Ala	Leu	Ala	Phe	Ile	Gly	Ser	Phe	Gly	Pro	Ile
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Tyr	Ile	Phe	Gly	Gly	Tyr	Lys	Asn	Leu	Val	Gln	Ser	Met	His	Arg	Ile
					20				25					30	
Phe	Pro	Phe	Ala	Arg	Gly	Ile	Phe	Glu	Asp	Lys	Val	Ala	Asn	Phe	Trp
					35				40					45	
Cys	Val	Ser	Asn	Ile	Phe	Ile	Lys	Tyr	Arg	Asn	Leu	Phe	Thr	Gln	Lys
					50				55					60	
Asp	Leu	Gln	Leu	Tyr	Ser	Leu	Leu	Ala	Thr	Val	Ile	Gly	Leu	Leu	Pro
					65				70					80	
Ser	Phe	Ile	Ile	Thr	Phe	Leu	Tyr	Pro	Lys	Arg	His	Leu	Leu	Pro	Tyr
					85				90					95	
Ala	Leu	Ala	Ala	Cys	Ser	Met	Ser	Phe	Phe	Leu	Phe	Ser	Phe	Gln	Val
					100				105					110	
His	Glu	Lys	Thr	Ile	Leu	Leu	Pro	Leu	Leu	Pro	Ile	Thr	Leu	Leu	Tyr
					115				120					125	
Thr	Ser	Arg	Asp	Trp	Asn	Val	Leu	Ser	Leu	Val	Cys	Trp	Ile	Asn	Asn
					130				135					140	
Val	Ala	Leu	Phe	Thr	Leu	Trp	Pro	Leu	Leu	Lys	Lys	Asp	Asn	Leu	Val
					145				150					160	
Leu	Gln	Tyr	Gly	Val	Met	Phe	Met	Phe	Ser	Asn	Trp	Leu	Ile	Gly	Asn
					165				170					175	
Phe	Ser	Phe	Val	Thr	Pro	Arg	Phe	Leu	Pro	Lys	Phe	Leu	Thr	Pro	Gly
					180				185					190	
Pro	Ser	Ile	Ser	Asp	Ile	Asp	Val	Asp	Tyr	Arg	Arg	Ala	Ser	Leu	Leu
					195				200					205	

Pro Lys Ser Leu Ile Trp Arg Leu Ile Ile Val Gly Ser Tyr Ile Ala
 210 215 220
 Met Gly Ile Ile His Phe Leu Asp Tyr Tyr Val Ser Pro Pro Ser Lys
 225 230 235 240
 Tyr Pro Asp Leu Trp Val Leu Ala Asn Cys Ser Leu Gly Phe Ser Cys
 245 250 255
 Phe Val Thr Phe Trp Ile Trp Asn Asn Tyr Asn Tyr Ser Lys Glu Thr
 260 265 270
 Ala Leu Cys Lys Ile
 275

<210> 88
 <211> 284
 <212> PRT
 <213> Kluyveromyces lactis

<220>
 <221> MOD_RES
 <222> (116) ... (127)
 <223> Xaa is a variable amino acid

<220>
 <221> MOD_RES
 <222> 271
 <223> Xaa is a variable amino acid

<400> 88
 Ile Ser Val Ser Thr Ala Leu Ala Phe Ile Gly Ser Phe Gly Pro Ile
 1 5 10 15
 Tyr Ile Phe Gly Gly Tyr Lys Asn Leu Val Gln Ser Met His Arg Ile
 20 25 30
 Phe Pro Phe Ala Arg Gly Ile Phe Glu Asp Lys Val Ala Asn Phe Trp
 35 40 45
 Cys Val Ser Asn Ile Phe Ile Lys Tyr Arg Asn Leu Phe Thr Gln Lys
 50 55 60
 Asp Leu Gln Leu Tyr Ser Leu Leu Ala Thr Val Ile Gly Leu Leu Pro

65	70	75	80
Ser Phe Ile Ile Thr Phe Leu Tyr Pro Lys Arg His Leu Leu Pro Tyr			
85	90	95	
Ala Leu Ala Ala Cys Ser Met Ser Phe Phe Leu Phe Ser Phe Gln Val			
100	105	110	
His Glu Lys Xaa Tyr			
115	120	125	
Thr Ser Arg Asp Trp Asn Val Leu Ser Leu Val Cys Trp Ile Asn Asn			
130	135	140	
Val Ala Leu Phe Thr Leu Trp Pro Leu Leu Lys Lys Asp Asn Leu Val			
145	150	155	160
Leu Gln Tyr Gly Val Met Phe Met Phe Ser Asn Trp Leu Ile Gly Asn			
165	170	175	
Phe Ser Phe Val Thr Pro Arg Phe Leu Pro Lys Phe Leu Thr Pro Gly			
180	185	190	
Pro Ser Ile Ser Asp Ile Asp Val Asp Tyr Arg Arg Ala Ser Leu Leu			
195	200	205	
Pro Lys Ser Leu Ile Trp Arg Leu Ile Ile Val Gly Ser Tyr Ile Ala			
210	215	220	
Met Gly Ile Ile His Phe Leu Asp Tyr Tyr Val Ser Pro Pro Ser Gln			
225	230	235	240
Glu Arg Tyr Lys Tyr Pro Asp Leu Trp Val Leu Ala Asn Cys Ser Leu			
245	250	255	
Gly Phe Ser Cys Phe Val Thr Phe Trp Ile Trp Asn Asn Tyr Xaa Leu			
260	265	270	
Phe Glu Arg Met Arg Asn Ser Thr Leu Gln Asp Leu			
275	280		

<210> 89
<211> 280
<212> PRT
<213> *Saccharomyces cerevisiae*

<400> 89
Ile Ala Phe Ala Thr Leu Ala Thr Phe Ala Ile Ile Phe Ala Pro Leu
1 5 10 15

Tyr Phe Leu Gly Gly Leu Lys Asn Ile His Gln Cys Ile His Arg
 20 25 30
 Ile Phe Pro Phe Ala Arg Gly Ile Phe Glu Asp Lys Val Ala Asn Phe
 35 40 45
 Trp Cys Val Thr Asn Val Phe Val Lys Tyr Lys Glu Arg Phe Thr Ile
 50 55 60
 Gln Gln Leu Gln Leu Tyr Ser Leu Ile Ala Thr Val Ile Gly Phe Leu
 65 70 75 80
 Pro Ala Met Ile Met Thr Leu Leu His Pro Lys Lys His Leu Leu Pro
 85 90 95
 Tyr Val Leu Ile Ala Cys Ser Met Ser Phe Phe Leu Phe Ser Phe Gln
 100 105 110
 Val His Glu Lys Thr Ile Leu Ile Pro Leu Leu Pro Ile Thr Leu Leu
 115 120 125
 Tyr Ser Ser Thr Asp Trp Asn Val Leu Ser Leu Val Ser Trp Ile Asn
 130 135 140
 Asn Val Ala Leu Phe Thr Leu Trp Pro Leu Leu Lys Lys Asp Gly Leu
 145 150 155 160
 His Leu Gln Tyr Ala Val Ser Phe Leu Leu Ser Asn Trp Leu Ile Gly
 165 170 175
 Asn Phe Ser Phe Ile Thr Pro Arg Phe Leu Pro Lys Ser Leu Thr Pro
 180 185 190
 Gly Pro Ser Ile Ser Ser Ile Asn Ser Asp Tyr Arg Arg Arg Ser Leu
 195 200 205
 Leu Pro Tyr Asn Val Val Trp Lys Ser Phe Ile Ile Gly Thr Tyr Ile
 210 215 220
 Ala Met Gly Phe Tyr His Phe Leu Asp Gln Phe Val Ala Pro Pro Ser
 225 230 235 240
 Lys Tyr Pro Asp Leu Trp Val Leu Leu Asn Cys Ala Val Gly Phe Ile
 245 250 255
 Cys Phe Ser Ile Phe Trp Leu Trp Ser Tyr Tyr Lys Ile Phe Thr Ser
 260 265 270
 Gly Ser Lys Ser Met Lys Asp Leu
 275 280

<210> 90

<211> 284
<212> PRT
<213> Kluyveromyces lactis

<220>
<221> MOD_RES
<222> (116) ... (127)
<223> Xaa is a variable amino acid

<220>
<221> MOD_RES
<222> 271
<223> Xaa is a variable amino acid

<400> 90
Ile Ser Val Ser Thr Ala Leu Ala Phe Ile Gly Ser Phe Gly Pro Ile
1 5 10 15
Tyr Ile Phe Gly Gly Tyr Lys Asn Leu Val Gln Ser Met His Arg Ile
20 25 30
Phe Pro Phe Ala Arg Gly Ile Phe Glu Asp Lys Val Ala Asn Phe Trp
35 40 45
Cys Val Ser Asn Ile Phe Ile Lys Tyr Arg Asn Leu Phe Thr Gln Lys
50 55 60
Asp Leu Gln Leu Tyr Ser Leu Leu Ala Thr Val Ile Gly Leu Leu Pro
65 70 75 80
Ser Phe Ile Ile Thr Phe Leu Tyr Pro Lys Arg His Leu Leu Pro Tyr
85 90 95
Ala Leu Ala Ala Cys Ser Met Ser Phe Phe Leu Phe Ser Phe Gln Val
100 105 110
His Glu Lys Xaa Tyr
115 120 125
Thr Ser Arg Asp Trp Asn Val Leu Ser Leu Val Cys Trp Ile Asn Asn
130 135 140
Val Ala Leu Phe Thr Leu Trp Pro Leu Leu Lys Lys Asp Asn Leu Val
145 150 155 160
Leu Gln Tyr Gly Val Met Phe Met Phe Ser Asn Trp Leu Ile Gly Asn
165 170 175

Phe Ser Phe Val Thr Pro Arg Phe Leu Pro Lys Phe Leu Thr Pro Gly			
180	185	190	
Pro Ser Ile Ser Asp Ile Asp Val Asp Tyr Arg Arg Ala Ser Leu Leu			
195	200	205	
Pro Lys Ser Leu Ile Trp Arg Leu Ile Ile Val Gly Ser Tyr Ile Ala			
210	215	220	
Met Gly Ile Ile His Phe Leu Asp Tyr Tyr Val Ser Pro Pro Ser Gln			
225	230	235	240
Glu Arg Tyr Lys Tyr Pro Asp Leu Trp Val Leu Ala Asn Cys Ser Leu			
245	250	255	
Gly Phe Ser Cys Phe Val Thr Phe Trp Ile Trp Asn Asn Tyr Xaa Leu			
260	265	270	
Phe Glu Arg Met Arg Asn Ser Thr Leu Gln Asp Leu			
275	280		

<210> 91
<211> 250
<212> PRT
<213> Schizosaccharomyces pombe

<400> 91			
Leu Ser Val Thr Val Val Phe Thr Phe Ser Leu Ile Leu Phe Pro Trp			
1	5	10	15
Ile Tyr Met Asp Tyr Lys Thr Leu Leu Pro Gln Ile Leu His Arg Val			
20	25	30	
Phe Pro Phe Ala Arg Gly Leu Trp Glu Asp Lys Val Ala Asn Phe Trp			
35	40	45	
Cys Thr Leu Asn Thr Val Phe Lys Ile Arg Glu Val Phe Thr Leu His			
50	55	60	
Gln Leu Gln Val Ile Ser Leu Ile Phe Thr Leu Ile Ser Ile Leu Pro			
65	70	75	80
Ser Cys Val Ile Leu Phe Leu Tyr Pro Arg Lys Arg Leu Leu Ala Leu			
85	90	95	
Gly Phe Ala Ser Ala Ser Trp Gly Phe Phe Leu Phe Ser Phe Gln Val			
100	105	110	
His Glu Lys Ser Val Leu Leu Pro Leu Leu Pro Thr Ser Ile Leu Leu			

115	120	125
Cys His Gly Asn Ile Thr Thr Lys Pro Trp Ile Ala Leu Ala Asn Asn		
130	135	140
Leu Ala Val Phe Ser Leu Trp Pro Leu Leu Lys Lys Asp Gly Leu Gly		
145	150	155
Leu Gln Tyr Phe Thr Leu Val Leu Met Trp Asn Trp Ile Gly Asp Met		160
165	170	175
Val Val Phe Ser Lys Asn Val Leu Phe Arg Phe Ile Gln Leu Ser Phe		
180	185	190
Tyr Val Gly Met Ile Val Ile Leu Gly Ile Asp Leu Phe Ile Pro Pro		
195	200	205
Pro Ser Arg Tyr Pro Asp Leu Trp Val Ile Leu Asn Val Thr Leu Ser		
210	215	220
Phe Ala Gly Phe Phe Thr Ile Tyr Leu Trp Thr Leu Gly Arg Leu Leu		
225	230	235
His Ile Ser Ser Lys Leu Ser Thr Asp Leu		240
245	250	

<210> 92
<211> 238
<212> PRT
<213> Kluyveromyces lactis

<220>
<221> MOD_RES
<222> (88) ... (99)
<223> Xaa is a variable amino acid

<400> 92
Met His Arg Ile Phe Pro Phe Ala Arg Gly Ile Phe Glu Asp Lys Val
1 5 10 15
Ala Asn Phe Trp Cys Val Ser Asn Ile Phe Ile Lys Tyr Arg Asn Leu
20 25 30
Phe Thr Gln Lys Asp Leu Gln Leu Tyr Ser Leu Leu Ala Thr Val Ile
35 40 45
Gly Leu Leu Pro Ser Phe Ile Ile Thr Phe Leu Tyr Pro Lys Arg His

50	55	60		
Leu	Leu	Pro		
Tyr	Ala	Leu		
Ala	Ala	Ala		
Cys	Ser	Met		
Met	Ser	Phe		
Phe	Phe	Leu		
Phe		Phe		
65	70	75	80	
Ser	Phe	Gln	Val	
His	Glu	Lys	Xaa	
Xaa	Xaa	Xaa	Xaa	
Xaa	Xaa	Xaa	Xaa	
Xaa	Xaa	Xaa	Xaa	
Xaa	Xaa	Xaa	Xaa	
85		90	95	
Xaa	Xaa	Tyr	Thr	
Ser	Arg	Asp	Trp	
Trp	Asn	Val	Leu	
Leu	Ser	Leu	Val	
Cys				
100		105	110	
Trp	Ile	Asn	Asn	
Asn	Val	Val	Ala	
Ala	Leu	Phe	Thr	
Phe	Thr	Leu	Trp	
Trp	Pro	Leu	Leu	
Leu	Lys	Lys	Lys	
115		120	125	
Asp	Asn	Leu	Val	
Leu	Gln	Tyr	Gly	
Gly	Val	Met	Phe	
Met	Phe	Ser	Asn	
Asn	Trp			
130		135	140	
Leu	Ile	Gly	Asn	
Asn	Phe	Ser	Phe	
Phe	Val	Thr	Pro	
Val	Thr	Pro	Arg	
Thr	Pro	Phe	Leu	
Pro	Ile	Leu	Pro	
Ile	Ser	Pro	Lys	
Ser	Asp	Asp	Asn	
Asp	Ile	Asp	Val	
Ile	Asp	Val	Asp	
Asp	Tyr	Arg	Arg	
Tyr	Arg	Arg	Arg	
145		150	155	160
Leu	Thr	Pro	Gly	
Thr	Pro	Gly	Pro	
Pro	Ser	Ile	Ser	
Ser	Ile	Ser	Asp	
Ile	Ser	Asp	Ile	
Ser	Asp	Ile	Asp	
Asp	Val	Asp	Tyr	
Val	Asp	Tyr	Arg	
Arg	Arg	Arg	Arg	
165		170	175	
Ala	Ser	Leu	Leu	
Leu	Pro	Lys	Ser	
Pro	Leu	Ile	Thr	
Ile	Trp	Arg	Leu	
Trp	Arg	Leu	Ile	
Arg	Leu	Ile	Ile	
Leu	Ile	Ile	Val	
Ile	Val	Gly		
180		185	190	
Ser	Tyr	Ile	Ala	
Tyr	Ile	Ala	Met	
Ala	Met	Gly	Ile	
Ile	Ile	His	Phe	
Phe	Leu	Asp	Tyr	
Leu	Asp	Tyr	Tyr	
Asp	Tyr	Val	Ser	
Tyr	Val	Ser		
195		200	205	
Pro	Pro	Ser	Lys	
Ser	Tyr	Pro	Asp	
Pro	Asp	Leu	Trp	
Asp	Leu	Trp	Val	
Leu	Trp	Val	Leu	
Trp	Val	Leu	Ala	
Val	Leu	Ala	Asn	
Leu	Ala	Asn	Cys	
Ala	Asn	Cys	Ser	
Asn	Cys	Ser	Leu	
Cys	Ser	Leu		
210		215	220	
Gly	Phe	Ser	Cys	
Phe	Val	Thr	Phe	
Val	Thr	Phe	Trp	
Thr	Phe	Trp	Ile	
Phe	Trp	Ile	Trp	
Trp	Asn	Asn	Tyr	
Asn	Asn	Tyr		
225		230	235	

<210> 93
<211> 219
<212> PRT
<213> Arabidopsis thaliana

<400> 93
Leu Ser Arg Leu Ala Pro Phe Glu Arg Gly Ile Tyr Glu Asp Tyr Val
1 5 10 15
Ala Asn Phe Trp Cys Thr Thr Ser Ile Leu Ile Lys Trp Lys Asn Leu
20 25 30
Phe Thr Thr Gln Ser Leu Lys Ser Ile Ser Leu Ala Ala Thr Ile Leu
35 40 45

Ala Ser Leu Pro Ser Met Val Gln Gln Ile Leu Ser Pro Ser Asn Glu
 50 55 60
 Gly Phe Leu Tyr Gly Leu Leu Asn Ser Ser Met Ala Phe Tyr Leu Phe
 65 70 75 80
 Ser Phe Gln Val His Glu Lys Ser Ile Leu Met Pro Phe Leu Ser Ala
 85 90 95
 Thr Leu Leu Ala Leu Lys Leu Pro Asp His Phe Ser His Leu Thr Tyr
 100 105 110
 Tyr Ala Leu Phe Ser Met Phe Pro Leu Leu Cys Arg Asp Lys Leu Leu
 115 120 125
 Ile Pro Tyr Leu Thr Leu Ser Phe Leu Phe Thr Val Ile Tyr His Ser
 130 135 140
 Pro Gly Asn His His Ala Ile Gln Lys Thr Asp Val Ser Phe Phe Ser
 145 150 155 160
 Phe Lys Asn Phe Pro Gly Tyr Val Phe Leu Leu Arg Thr His Phe Phe
 165 170 175
 Ile Ser Val Val Leu His Val Leu Tyr Leu Thr Ile Lys Pro Pro Gln
 180 185 190
 Lys Tyr Pro Phe Leu Phe Glu Ala Leu Ile Met Ile Leu Cys Phe Ser
 195 200 205
 Tyr Phe Ile Met Phe Ala Phe Tyr Thr Asn Tyr
 210 215

<210> 94
 <211> 252
 <212> PRT
 <213> Kluyveromyces lactis

<220>
 <221> MOD_RES
 <222> (114) ... (125)
 <223> Xaa is a variable amino acid

<400> 94
 Val Ser Thr Ala Leu Ala Phe Ile Gly Ser Phe Gly Pro Ile Tyr Ile
 1 5 10 15

Phe Gly Gly Tyr Lys Asn Leu Val Gln Ser Met His Arg Ile Phe Pro
 20 25 30
 Phe Ala Arg Gly Ile Phe Glu Asp Lys Val Ala Asn Phe Trp Cys Val
 35 40 45
 Ser Asn Ile Phe Ile Lys Tyr Arg Asn Leu Phe Thr Gln Lys Asp Leu
 50 55 60
 Gln Leu Tyr Ser Leu Leu Ala Thr Val Ile Gly Leu Leu Pro Ser Phe
 65 70 75 80
 Ile Ile Thr Phe Leu Tyr Pro Lys Arg His Leu Leu Pro Tyr Ala Leu
 85 90 95
 Ala Ala Cys Ser Met Ser Phe Phe Leu Phe Ser Phe Gln Val His Glu
 100 105 110
 Lys Xaa Tyr Thr Ser
 115 120 125
 Arg Asp Trp Asn Val Leu Ser Leu Val Cys Trp Ile Asn Asn Val Ala
 130 135 140
 Leu Phe Thr Leu Trp Pro Leu Leu Lys Lys Asp Asn Leu Val Leu Gln
 145 150 155 160
 Tyr Gly Val Met Phe Met Val Thr Pro Arg Phe Leu Pro Lys Phe Leu
 165 170 175
 Thr Pro Gly Pro Ser Ile Ser Asp Ile Asp Val Asp Tyr Arg Arg Ala
 180 185 190
 Ser Leu Leu Pro Lys Ser Leu Ile Trp Arg Leu Ile Ile Val Gly Ser
 195 200 205
 Tyr Ile Ala Met Gly Ile Ile His Phe Leu Asp Tyr Tyr Val Ser Pro
 210 215 220
 Pro Ser Lys Tyr Pro Asp Leu Trp Val Leu Ala Asn Cys Ser Leu Gly
 225 230 235 240
 Phe Ser Cys Phe Val Thr Phe Trp Ile Trp Asn Asn
 245 250

<210> 95
 <211> 259
 <212> PRT
 <213> Homo sapiens

<400> 95

Val	Lys	Leu	Ala	Cys	Ile	Val	Val	Ala	Ser	Phe	Val	Leu	Cys	Trp	Leu
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Pro	Phe	Phe	Thr	Glu	Arg	Glu	Gln	Thr	Leu	Gln	Val	Leu	Arg	Arg	Leu
			20				25					30			
Phe	Pro	Val	Asp	Arg	Gly	Leu	Phe	Glu	Asp	Lys	Val	Ala	Asn	Ile	Trp
			35			40				45					
Cys	Ser	Phe	Asn	Val	Phe	Leu	Lys	Ile	Lys	Asp	Ile	Leu	Pro	Arg	His
			50			55			60						
Ile	Gln	Leu	Ile	Met	Ser	Phe	Cys	Phe	Thr	Phe	Leu	Ser	Leu	Leu	Pro
			65			70			75				80		
Ala	Cys	Ile	Lys	Leu	Ile	Leu	Gln	Pro	Ser	Ser	Lys	Gly	Phe	Lys	Phe
			85				90				95				
Thr	Leu	Val	Ser	Cys	Ala	Leu	Ser	Phe	Phe	Leu	Phe	Ser	Phe	Gln	Val
			100				105			110					
His	Glu	Lys	Ser	Ile	Leu	Leu	Val	Ser	Leu	Pro	Val	Cys	Leu	Val	Leu
			115			120			125						
Ser	Glu	Ile	Pro	Phe	Met	Ser	Thr	Trp	Phe	Leu	Leu	Val	Ser	Thr	Phe
			130			135			140						
Ser	Met	Leu	Pro	Leu	Leu	Leu	Lys	Asp	Glu	Leu	Leu	Met	Pro	Ser	Val
			145			150			155				160		
Val	Thr	Thr	Met	Ala	Phe	Phe	Ile	Ala	Cys	Val	Thr	Ser	Phe	Ser	Ile
			165				170			175					
Phe	Glu	Lys	Thr	Ser	Glu	Glu	Leu	Gln	Leu	Lys	Ser	Phe	Ser	Ile	
			180			185			190						
Ser	Val	Arg	Lys	Tyr	Leu	Pro	Cys	Phe	Thr	Phe	Leu	Ser	Arg	Ile	Ile
			195			200			205						
Gln	Tyr	Leu	Phe	Leu	Ile	Ser	Val	Ile	Thr	Met	Val	Leu	Leu	Thr	Leu
			210			215			220						
Met	Thr	Val	Thr	Leu	Asp	Pro	Pro	Gln	Lys	Leu	Pro	Asp	Leu	Phe	Ser
			225			230			235				240		
Val	Leu	Val	Cys	Phe	Val	Ser	Cys	Leu	Asn	Phe	Leu	Phe	Phe	Leu	Val
			245				250			255					
Tyr	Phe	Asn													

<210> 96
<211> 1617
<212> DNA
<213> Mus musculus

<400> 96
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ctcagcccta acctcgatc cagcttctc tgaaacaatg cccctgtcac tccccaggcc 180
agtccggagc cgggtggccc cgacctattg cggacacccc tctactccca ctctcccctg 240
ctccagccac tgtccccgag caaggccaca gagaactgc accgggtgga cttcgtgtg 300
ccggaggaca ccacggagta ttttgtgcgc accaaagctg gtggtgtgtg cttcaaacc 360
ggtaccagga tgctggagaa accttcgcca gggcggacag aggagaagcc cgaagtgtct 420
gagggctcct cagcccgaaa acctgctcg 480
gagcccatga ggcacgtgtt gagtacgcgg 480
gagcgcctgg gcagccgggg cactaggcgc aagtgggttg agtgtgtgtg cctgccaggc 540
tggcacgggc ccagttgcgg ggtgcccacg gtggtgcagt attccaacct gcccaccaag 600
gaacgcctgg tacccaggaa ggtaccgagg cgggttatca acgcccata catcaaccac 660
gagttcgacc tgctggatgt gcgcttccat gagctggag atgttgcgg 720
gtctgtgaat ctaatttac cgcctacggg gagcctcg 780
cgctcaagtt ccgagagatg 780
ctgaccaatg gcacccatcg 840
gttccacctg gtggccgtca ggacggctgg attgcggatg actacctgcg cacccctc 900
acccaggatg gcgtctcccg cctgcgcac 960
ctgcggcccg atgacgtctt tatcatcgac 960
gatgcggacg agatccctgc gcgtgatgg 1020
gtgctgttcc tcaaactcta cgatggctgg 1020
acagagccct tcgccttcca catgcggaaag tccctgtatg gtttcttctg gaagcagccg 1080
ggcacactgg aggtgggtgc aggctgcacc atggacatgc tgcaggccgt gtatggctg 1140
gatggcatcc gcctgcgcgc cgcgcagatc tacaccatgc ccaacttccg gcagttatgag 1200
aacccgcacccg gccacatcct agtgcagtgg tctctcg 1260
gca 1260
tggcattgctt cctgggtgctt cacacccgag ggcattact ttcaaactctgt gtcagccag 1320
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agtttgatcc gcactggggg atggttcgac ggaacgcagc aggagtaccc tcctgcggac 1440
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ttgctggaaa atccctaccg ggagcccaag agcactgttag agggtgccg ccagaaccag 1560
ggctcagatg gaaggccatc tgctgtcagg ggcaagttgg atacagtgg 1617
ggctcagatg gaaggccatc tgctgtcagg ggcaagttgg atacagtgg 1617

<210> 97
<211> 536
<212> PRT

<213> Mus musculus

<400> 97

Met Arg Arg Tyr Lys Leu Phe Leu Met Phe Cys Met Ala Gly Leu Cys
 1 5 10 15
 Leu Ile Ser Phe Leu His Phe Phe Lys Thr Leu Ser Tyr Val Thr Phe
 20 25 30
 Pro Arg Glu Leu Ala Ser Leu Ser Pro Asn Leu Ile Ser Ser Phe Phe
 35 40 45
 Trp Asn Asn Ala Pro Val Thr Pro Gln Ala Ser Pro Glu Pro Gly Asp
 50 55 60
 Pro Asp Leu Leu Arg Thr Pro Leu Tyr Ser His Ser Pro Leu Leu Gln
 65 70 75 80
 Pro Leu Ser Pro Ser Lys Ala Thr Glu Glu Leu His Arg Val Asp Phe
 85 90 95
 Val Leu Pro Glu Asp Thr Thr Glu Tyr Phe Val Arg Thr Lys Ala Gly
 100 105 110
 Gly Val Cys Phe Lys Pro Gly Thr Arg Met Leu Glu Lys Pro Ser Pro
 115 120 125
 Gly Arg Thr Glu Glu Lys Thr Glu Val Ser Glu Gly Ser Ser Ala Arg
 130 135 140
 Gly Pro Ala Arg Arg Pro Met Arg His Val Leu Ser Ser Arg Glu Arg
 145 150 155 160
 Leu Gly Ser Arg Gly Thr Arg Arg Lys Trp Val Glu Cys Val Cys Leu
 165 170 175
 Pro Gly Trp His Gly Pro Ser Cys Gly Val Pro Thr Val Val Gln Tyr
 180 185 190
 Ser Asn Leu Pro Thr Lys Glu Arg Leu Val Pro Arg Glu Val Pro Arg
 195 200 205
 Arg Val Ile Asn Ala Ile Asn Ile Asn His Glu Phe Asp Leu Leu Asp
 210 215 220
 Val Arg Phe His Glu Leu Gly Asp Val Val Asp Ala Phe Val Val Cys
 225 230 235 240
 Asp Ser Asn Phe Thr Ala Tyr Gly Glu Pro Arg Pro Leu Lys Phe Arg
 245 250 255
 Glu Met Leu Thr Asn Gly Thr Phe Glu Tyr Ile Arg His Lys Val Leu
 260 265 270

Tyr Val Phe Leu Asp His Phe Pro Pro Gly Gly Arg Gln Asp Gly Trp
 275 280 285
 Ile Ala Asp Asp Tyr Leu Arg Thr Phe Leu Thr Gln Asp Gly Val Ser
 290 295 300
 Arg Leu Arg Asn Leu Arg Pro Asp Asp Val Phe Ile Ile Asp Asp Ala
 305 310 315 320
 Asp Glu Ile Pro Ala Arg Asp Gly Val Leu Phe Leu Lys Leu Tyr Asp
 325 330 335
 Gly Trp Thr Glu Pro Phe Ala Phe His Met Arg Lys Ser Leu Tyr Gly
 340 345 350
 Phe Phe Trp Lys Gln Pro Gly Thr Leu Glu Val Val Ser Gly Cys Thr
 355 360 365
 Met Asp Met Leu Gln Ala Val Tyr Gly Leu Asp Gly Ile Arg Leu Arg
 370 375 380
 Arg Arg Gln Tyr Tyr Thr Met Pro Asn Phe Arg Gln Tyr Glu Asn Arg
 385 390 395 400
 Thr Gly His Ile Leu Val Gln Trp Ser Leu Gly Ser Pro Leu His Phe
 405 410 415
 Ala Gly Trp His Cys Ser Trp Cys Phe Thr Pro Glu Gly Ile Tyr Phe
 420 425 430
 Lys Leu Val Ser Ala Gln Asn Gly Asp Phe Pro Arg Trp Gly Asp Tyr
 435 440 445
 Glu Asp Lys Arg Asp Leu Asn Tyr Ile Arg Ser Leu Ile Arg Thr Gly
 450 455 460
 Gly Trp Phe Asp Gly Thr Gln Gln Glu Tyr Pro Pro Ala Asp Pro Ser
 465 470 475 480
 Glu His Met Tyr Ala Pro Lys Tyr Leu Leu Lys Asn Tyr Asp Gln Phe
 485 490 495
 Arg Tyr Leu Leu Glu Asn Pro Tyr Arg Glu Pro Lys Ser Thr Val Glu
 500 505 510
 Gly Gly Arg Gln Asn Gln Gly Ser Asp Gly Arg Ser Ser Ala Val Arg
 515 520 525
 Gly Lys Leu Asp Thr Ala Glu Gly
 530 535

<211> 2115

<212> DNA

<213> Homo sapiens

<400> 98

gaaatgaacc tctcttattt attttattt gccttagagcc aggagtactg cattcagttg 60
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tgcgttgaa atgagatgag gctccgcaat ggaactgttag ccactgctt agcatttac 180
acttccttcc ttactttgtc ttggtaactt acatggcaaa atggaaaga aaaactgatt 240
gcttatcaac gagaattcct tgcttggaaa gaacgtcttc gaatagctga acacagaatc 300
tcacagcgct cttctgaatt aaatacgatt gtgcaacagt tcaagcgtgt aggagcagaa 360
acaatggaa gtaaggatgc gttgaataag tttcagata ataccctaaa gctgttaaag 420
gagttAACAA gcaaaaaatc tcttcaagtg ccaagtattt attatcattt gcctcattt 480
ttgaaaaatg aaggaagtct tcaacctgct gtacagattt gcaacggaag aacaggagtt 540
tcaatagtca tggcattcc cacagtgaag agagaagtta aatcttacct catagaaact 600
cttcattccc ttattgataa cctgtatcct gaagagaagt tggactgtgt tatagtagtc 660
ttcataggag agacagatat tgattatgta catgggttg tagccaacct ggagaaagaa 720
tttctaaag aaatcagttc tggcttggtg gaagtcatat cacccttga aagctattat 780
cctgacttga caaacctaaa ggagacattt ggagactcca aagaaagagt aagatggaga 840
acaatggaaa accttagatta ctgtttcta atgatgtatg ctcaagaaaa gggcatatat 900
tacattcagc ttgaagatga tattattgtc aaacaaaattt atttaatac cataaaaaat 960
tttgcacttc aactttcttc tgaggaatgg atgattctag agttttccca gctgggcttc 1020
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ccttccctt tccaacatgt tggctgcac tcatcactat cagaaaaat ccaaaaaactc 1260
acggataaaag attatatgaa accattactt cttaaaatcc atgtaaaccc acctgcggag 1320
gtatctactt ctttgaaggt ctaccaaggg catacgctgg agaaaaactta catgggagag 1380
gatttcttct gggctatcac accgatactt ggagactaca tcttggtaa atttgataaa 1440
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ctgctaaaca caactgtgga agtttgctt tttaaagatgt aagggttggaa aataagcaaa 1560
gaaaccaaag acaaacgatt agaagatggc tatttcagaa tagaaaaatt tgagaatgg 1620
gttgcagaag gaatggtgga tccaagtctc aatccattt cagccttgc actttcagtt 1680
attcagaatt ctgtgttttggccatttctt aatgagattt atattaaaaa agccaccaac 1740
tgatcatctg agaaaccaac acatTTTCTC ctgtgaattt gttaattttt gatagttaaag 1800
catgtatctt ttttttattt ctacttgaac actaccttctt gtgaagtctt ctgttagataa 1860
gacgattgtc atttccactt ggaaagtgaa tctcccataa taattgtatt tgttgaaac 1920

taagctgtcc tcagattta acttgactca aacattttc aattatgaca gcctgttaat 1980
 atgacttgcata ctatggat attatactaa tacataagag ttgtacatat tgttacattc 2040
 tttaaatttg agaaaaacta atgttacata catttatga agggggtaact tttgaggttc 2100
 acttattttta ctatt 2115

<210> 99

<211> 535

<212> PRT

<213> Homo sapiens

<400> 99

Met Arg Leu Arg Asn Gly Thr Val Ala Thr Ala Leu Ala Phe Ile Thr
 1 5 10 15

Ser Phe Leu Thr Leu Ser Trp Tyr Thr Thr Trp Gln Asn Gly Lys Glu
 20 25 30

Lys Leu Ile Ala Tyr Gln Arg Glu Phe Leu Ala Leu Lys Glu Arg Leu
 35 40 45

Arg Ile Ala Glu His Arg Ile Ser Gln Arg Ser Ser Glu Leu Asn Thr
 50 55 60

Ile Val Gln Gln Phe Lys Arg Val Gly Ala Glu Thr Asn Gly Ser Lys
 65 70 75 80

Asp Ala Leu Asn Lys Phe Ser Asp Asn Thr Leu Lys Leu Lys Glu
 85 90 95

Leu Thr Ser Lys Ser Leu Gln Val Pro Ser Ile Tyr Tyr His Leu
 100 105 110

Pro His Leu Leu Lys Asn Glu Gly Ser Leu Gln Pro Ala Val Gln Ile
 115 120 125

Gly Asn Gly Arg Thr Gly Val Ser Ile Val Met Gly Ile Pro Thr Val
 130 135 140

Lys Arg Glu Val Lys Ser Tyr Leu Ile Glu Thr Leu His Ser Leu Ile
 145 150 155 160

Asp Asn Leu Tyr Pro Glu Glu Lys Leu Asp Cys Val Ile Val Val Phe
 165 170 175

Ile Gly Glu Thr Asp Ile Asp Tyr Val His Gly Val Val Ala Asn Leu
 180 185 190

Glu Lys Glu Phe Ser Lys Glu Ile Ser Ser Gly Leu Val Glu Val Ile
 195 200 205

Ser Pro Pro Glu Ser Tyr Tyr Pro Asp Leu Thr Asn Leu Lys Glu Thr
 210 215 220
 Phe Gly Asp Ser Lys Glu Arg Val Arg Trp Arg Thr Lys Gln Asn Leu
 225 230 235 240
 Asp Tyr Cys Phe Leu Met Met Tyr Ala Gln Glu Lys Gly Ile Tyr Tyr
 245 250 255
 Ile Gln Leu Glu Asp Asp Ile Ile Val Lys Gln Asn Tyr Phe Asn Thr
 260 265 270
 Ile Lys Asn Phe Ala Leu Gln Leu Ser Ser Glu Glu Trp Met Ile Leu
 275 280 285
 Glu Phe Ser Gln Leu Gly Phe Ile Gly Lys Met Phe Gln Ala Pro Asp
 290 295 300
 Leu Thr Leu Ile Val Glu Phe Ile Phe Met Phe Tyr Lys Glu Lys Pro
 305 310 315 320
 Ile Asp Trp Leu Leu Asp His Ile Leu Trp Val Lys Val Cys Asn Pro
 325 330 335
 Glu Lys Asp Ala Lys His Cys Asp Arg Gln Lys Ala Asn Leu Arg Ile
 340 345 350
 Arg Phe Arg Pro Ser Leu Phe Gln His Val Gly Leu His Ser Ser Leu
 355 360 365
 Ser Gly Lys Ile Gln Lys Leu Thr Asp Lys Asp Tyr Met Lys Pro Leu
 370 375 380
 Leu Leu Lys Ile His Val Asn Pro Pro Ala Glu Val Ser Thr Ser Leu
 385 390 395 400
 Lys Val Tyr Gln Gly His Thr Leu Glu Lys Thr Tyr Met Gly Glu Asp
 405 410 415
 Phe Phe Trp Ala Ile Thr Pro Ile Ala Gly Asp Tyr Ile Leu Phe Lys
 420 425 430
 Phe Asp Lys Pro Val Asn Val Glu Ser Tyr Leu Phe His Ser Gly Asn
 435 440 445
 Gln Glu His Pro Gly Asp Ile Leu Leu Asn Thr Thr Val Glu Val Leu
 450 455 460
 Pro Phe Lys Ser Glu Gly Leu Glu Ile Ser Lys Glu Thr Lys Asp Lys
 465 470 475 480
 Arg Leu Glu Asp Gly Tyr Phe Arg Ile Gly Lys Phe Glu Asn Gly Val
 485 490 495
 Ala Glu Gly Met Val Asp Pro Ser Leu Asn Pro Ile Ser Ala Phe Arg

500	505	510
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His Ile Lys Lys Ala Thr Asn		
530	535	

<210> 100

<211> 3226

<212> DNA

<213> Mus musculus

<400> 100

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<210> 101

<211> 740

<212> PRT

<213> Mus musculus

<400> 101

Met Ala Phe Phe Ser Pro Trp Lys Leu Ser Ser Gln Lys Leu Gly Phe
 1 5 10 15
 Phe Leu Val Thr Phe Gly Phe Ile Trp Gly Met Met Leu Leu His Phe
 20 25 30
 Thr Ile Gln Gln Arg Thr Gln Pro Glu Ser Ser Met Leu Arg Glu
 35 40 45
 Gln Ile Leu Asp Leu Ser Lys Arg Tyr Ile Lys Ala Leu Ala Glu Glu
 50 55 60
 Asn Arg Asp Val Val Asp Gly Pro Tyr Ala Gly Val Met Thr Ala Tyr
 65 70 75 80
 Asp Leu Lys Lys Thr Leu Ala Val Leu Leu Asp Asn Ile Leu Gln Arg
 85 90 95
 Ile Gly Lys Leu Glu Ser Lys Val Asp Asn Leu Val Asn Gly Thr Gly
 100 105 110
 Ala Asn Ser Thr Asn Ser Thr Thr Ala Val Pro Ser Leu Val Ser Leu
 115 120 125
 Glu Lys Ile Asn Val Ala Asp Ile Ile Asn Gly Val Gln Glu Lys Cys
 130 135 140
 Val Leu Pro Pro Met Asp Gly Tyr Pro His Cys Glu Gly Lys Ile Lys
 145 150 155 160
 Trp Met Lys Asp Met Trp Arg Ser Asp Pro Cys Tyr Ala Asp Tyr Gly
 165 170 175
 Val Asp Gly Thr Ser Cys Ser Phe Phe Ile Tyr Leu Ser Glu Val Glu
 180 185 190
 Asn Trp Cys Pro Arg Leu Pro Trp Arg Ala Lys Asn Pro Tyr Glu Glu
 195 200 205
 Ala Asp His Asn Ser Leu Ala Glu Ile Arg Thr Asp Phe Asn Ile Leu
 210 215 220
 Tyr Gly Met Met Lys Lys His Glu Glu Phe Arg Trp Met Arg Leu Arg
 225 230 235 240
 Ile Arg Arg Met Ala Asp Ala Trp Ile Gln Ala Ile Lys Ser Leu Ala
 245 250 255
 Glu Lys Gln Asn Leu Glu Lys Arg Lys Arg Lys Lys Ile Leu Val His
 260 265 270
 Leu Gly Leu Leu Thr Lys Glu Ser Gly Phe Lys Ile Ala Glu Thr Ala
 275 280 285
 Phe Ser Gly Gly Pro Leu Gly Glu Leu Val Gln Trp Ser Asp Leu Ile

290	295	300
Thr Ser Leu Tyr Leu Leu Gly His Asp Ile Arg Ile Ser Ala Ser Leu		
305	310	315
Ala Glu Leu Lys Glu Ile Met Lys Lys Val Val Gly Asn Arg Ser Gly		320
325	330	335
Cys Pro Thr Val Gly Asp Arg Ile Val Glu Leu Ile Tyr Ile Asp Ile		
340	345	350
Val Gly Leu Ala Gln Phe Lys Lys Thr Leu Gly Pro Ser Trp Val His		
355	360	365
Tyr Gln Cys Met Leu Arg Val Leu Asp Ser Phe Gly Thr Glu Pro Glu		
370	375	380
Phe Asn His Ala Ser Tyr Ala Gln Ser Lys Gly His Lys Thr Pro Trp		
385	390	395
Gly Lys Trp Asn Leu Asn Pro Gln Gln Phe Tyr Thr Met Phe Pro His		400
405	410	415
Thr Pro Asp Asn Ser Phe Leu Gly Phe Val Val Glu Gln His Leu Asn		
420	425	430
Ser Ser Asp Ile His His Ile Asn Glu Ile Lys Arg Gln Asn Gln Ser		
435	440	445
Leu Val Tyr Gly Lys Val Asp Ser Phe Trp Lys Asn Lys Lys Ile Tyr		
450	455	460
Leu Asp Ile Ile His Thr Tyr Met Glu Val His Ala Thr Val Tyr Gly		
465	470	475
Ser Ser Thr Lys Asn Ile Pro Ser Tyr Val Lys Asn His Gly Ile Leu		480
485	490	495
Ser Gly Arg Asp Leu Gln Phe Leu Leu Arg Glu Thr Lys Leu Phe Val		
500	505	510
Gly Leu Gly Phe Pro Tyr Glu Gly Pro Ala Pro Leu Glu Ala Ile Ala		
515	520	525
Asn Gly Cys Ala Phe Leu Asn Pro Lys Phe Asn Pro Pro Lys Ser Ser		
530	535	540
Lys Asn Thr Asp Phe Phe Ile Gly Lys Pro Thr Leu Arg Glu Leu Thr		
545	550	555
Ser Gln His Pro Tyr Ala Glu Val Phe Ile Gly Arg Pro His Val Trp		560
565	570	575
Thr Val Asp Leu Asn Asn Arg Glu Glu Val Glu Asp Ala Val Lys Ala		
580	585	590

Ile Leu Asn Gln Lys Ile Glu Pro Tyr Met Pro Tyr Glu Phe Thr Cys
595 600 605
Glu Gly Met Leu Gln Arg Ile Asn Ala Phe Ile Glu Lys Gln Asp Phe
610 615 620
Cys His Gly Gln Val Met Trp Pro Pro Leu Ser Ala Leu Gln Val Lys
625 630 635 640
Leu Ala Glu Pro Gly Gln Ser Cys Lys Gln Val Cys Gln Glu Ser Gln
645 650 655
Leu Ile Cys Glu Pro Ser Phe Phe Gln His Leu Asn Lys Glu Lys Asp
660 665 670
Leu Leu Lys Tyr Lys Val Thr Cys Gln Ser Ser Glu Leu Tyr Lys Asp
675 680 685
Ile Leu Val Pro Ser Phe Tyr Pro Lys Ser Lys His Cys Val Phe Gln
690 695 700
Gly Asp Leu Leu Leu Phe Ser Cys Ala Gly Ala His Pro Thr His Gln
705 710 715 720
Arg Ile Cys Pro Cys Arg Asp Phe Ile Lys Gly Gln Val Ala Leu Cys
725 730 735
Lys Asp Cys Leu
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<210> 102

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Illustrative retention signal peptide

<400> 102

Lys Asp Glu Leu

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<210> 103

<211> 60

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 103

Ile Pro Phe Val Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser
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Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro
20 25 30

Ile Leu Ile Phe Trp Ser Gly Met Pro Phe Val Gly Pro Ile Trp
35 40 45

Tyr Val Leu His Glu Trp Cys Trp Asn Ser Tyr Pro
50 55 60

<210> 104

<211> 58

<212> PRT

<213> *Drosophila virilis*

<400> 104

Leu Pro Phe Phe Leu Cys Asn Phe Ile Gly Val Ala Cys Ala Arg Ser
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Leu His Tyr Gln Phe Tyr Ile Trp Tyr Phe His Ser Leu Pro Tyr Leu
20 25 30

Val Trp Ser Thr Pro Tyr Ser Leu Gly Val Arg Tyr Leu Ile Leu Gly
35 40 45

Ile Ile Glu Tyr Cys Trp Asn Thr Tyr Pro
50 55

<210> 105

<211> 60

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 105

Ile Pro Phe Val Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser

1 5 10 15
Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro
20 25 30
Ile Leu Ile Phe Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp
35 40 45
Tyr Val Leu His Glu Trp Cys Trp Asn Ser Tyr Pro
50 55 60

<210> 106

<211> 59

<212> PRT

<213> Drosophila melanogaster

<400> 106

Leu Pro Phe Phe Leu Cys Asn Leu Val Gly Val Ala Cys Ala Ser Arg
1 5 10 15
Ser Leu His Tyr Gln Phe Tyr Val Trp Tyr Phe His Ser Leu Pro Tyr
20 25 30
Leu Ala Trp Ser Thr Pro Tyr Ser Leu Gly Val Arg Cys Leu Ile Leu
35 40 45
Gly Leu Ile Glu Tyr Cys Trp Asn Thr Tyr Pro
50 55